

Global Water Monitor & Forecast Watch List

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For more information, contact:

Thomas M. Parris, President, 802-864-2999, parris@isciences.com

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Introduction

The ISciences Water Security Indicator Model (WSIM) monitors and forecasts water anomalies on a global basis. Each month we produce data and a report that document current conditions and provide forecasts with lead times from 1 to 9 months. WSIM has been run continuously since April 2011 and has been validated against subsequently observed data.

ISciences also provides assessments of the impacts of water anomalies on people, agriculture, and electricity generation. Detailed data and reports are available for purchase. Additional information and pricing are available upon request.

We have recently completed the latest Water Security Indicator Model (WSIM) analysis of global water anomalies using observed temperature and precipitation through April 2022 and an ensemble of forecasts issued the last week of April 2022. This edition of *Global Water Monitor & Forecast Watch List* presents a selection of regions likely to encounter significant water anomalies in the next few months. This report uses results from WSIM Version 2. Visit <https://wsim.isciences.com> for details.

All maps have half-degree resolution and depict our composite water anomaly index, which is based on WSIM estimates of soil moisture, evapotranspiration deficit, runoff, and total blue water anomalies. Shades of red indicate deficits and shades of blue indicate surpluses. Since different variables are used to estimate deficits and surpluses, it is possible for a single half-degree cell to register both a deficit and a surplus. These cases are depicted on the maps in shades of purple, with the more extreme value (deficit or surplus) used to determine the shade.

Deficits and surpluses are stated in terms of return period – a measure that characterizes the rarity of an event. For example, a return period of 10 years indicates an event that would occur, on average, once every ten years. Higher return periods indicate more extreme and, therefore, more disruptive anomalies. Return period is computed by comparison to cell-specific distributions of data from 1950 through 2009. Anomaly levels correspond to return periods: abnormal=3-5 years, moderate=5-10 years, severe=10-20 years, extreme=20-40 years, and exceptional=greater than 40 years.

Please note that the WSIM model makes use of seasonal temperature and precipitation forecasts produced by the U.S. National Oceanic and Atmospheric Administration (NOAA) Climate Forecast System Version 2 (CFSv2). These forecasts predict broad temperature and precipitation patterns, but do not effectively predict singular events such as tropical storms. Detailed outlooks and analyses of tropical storms are available from the [NOAA National Hurricane Center](#).

There are numerous regions around the world where country borders are contested. ISciences depicts country boundaries on these maps solely to provide some geographic context. The boundaries are nominal, not legal, descriptions of each entity. The use of these boundaries does not imply any judgement on the legal status of any territory, or any endorsement or acceptance of disputed boundaries on the part of ISciences or our data providers.

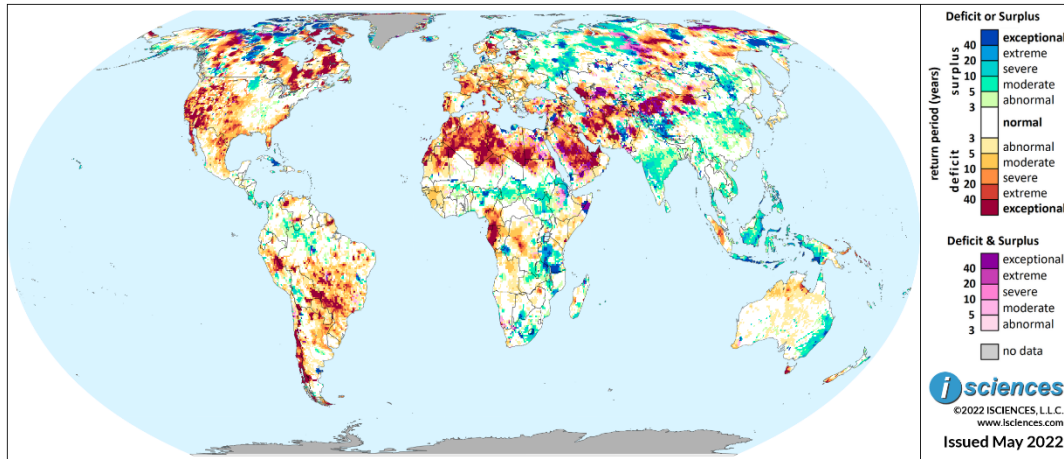
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Worldwide Water Watch List

This map presents a selection of regions likely to encounter significant water anomalies during the one-year period beginning in February 2022 and running through January 2023 using 3 months of observed temperature and precipitation data and 9 months of forecast data.

ISciences Water Anomalies Forecast: February 2022 - January 2023



Based on observed data through April 2022 and forecasts through January 2023

Watch List: Regional Synopsis

This synopsis provides highlights of regional water forecasts. More detailed analysis is available in “Watch List: Regional Details” immediately following the synopsis.

United States: The forecast through July indicates that water deficits will increase, encompassing the West, Rockies, Southwest, Central and Southern Plains, and into the Pacific Northwest. Deficits will downgrade in Texas and Virginia through Florida. Surpluses will persist in eastern North and South Dakota.

Canada: The forecast through July indicates vast areas of intense water deficit in the nation’s eastern half. Some pockets of deficit and of surplus are expected in southern Manitoba and Alberta. Surpluses will intensify in the North Thompson and Quesnel River Watersheds in British Columbia.

Mexico, Central America, and the Caribbean: The forecast through July indicates generally moderate water deficits in Baja, north-central Mexico, and Puebla. Regions with a forecast of surplus include Mexico’s Sierra Madre Occidental range and Central America.

South America: The forecast through July indicates widespread water deficits across central Brazil, exceptional in Tocantins, Mato Grosso, Goiás, and the Paraná River. Deficits are also expected in central Peru and much of Chile. Surpluses are forecast in the northwestern Amazon Basin.

Europe: The forecast through July indicates that water deficits will become widespread in many areas of Europe. Regions with a forecast of intense deficit include Estonia, France, eastern Czech Republic, Vatican City, and the Drava, Danube, and Oder Rivers

Africa: The forecast through July indicates water deficits across North Africa, intense in western Algeria, northern Niger, and southeastern Libya into Sudan. Surpluses are forecast in East Africa from Tanzania through South Africa. Deficits will shrink in the Horn but increase in Kenya.

Middle East: The forecast through July indicates widespread water deficits in the region, intense in Riyadh Province, Saudi Arabia; along the Gharraf Canal in Iraq; Fars, Kerman, and Isfahan Provinces in Iran; and from the Upper Cehan River region to the Keban Dam on the Firat River (Euphrates) in Turkey.

Central Asia and Russia: The forecast through July indicates water surpluses in the eastern Volga region, Middle and Lower Ob, northern Sakha, and Transbaikal. Deficits will be intense in the Yenisei's eastern tributaries and moderate in Turkmenistan and Mangystau, Kazakhstan.

South Asia: The forecast through July indicates widespread water surpluses in India from Madhya Pradesh to the west coast, in West Bengal and neighboring states, and from southeastern Karnataka to Chennai. Deficits in Pakistan and Afghanistan will shrink and moderate.

Southeast Asia and the Pacific: The forecast through July indicates that water surpluses will shrink and downgrade in Southeast Asia but remain widespread. Surpluses will persist in Malaysia, the Philippines, and many regions of Indonesia. Deficits will emerge in Sumatra.

East Asia: The forecast through July indicates that water surpluses will persist from Northeast China through the North China Plain and much of the Yellow River Watershed and will emerge in Yunnan. Moderate deficits will emerge in Southeast China.

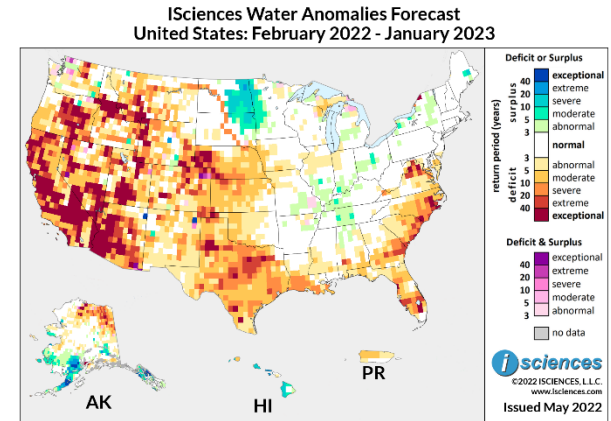
Australia & New Zealand: The forecast through July indicates that water surpluses will remain widespread in eastern Australia from Queensland into Victoria. Exceptional deficits are forecast in Northern Territory, Tasmania, and southern New Zealand.

Watch List: Regional Details

United States

The 12-month forecast ending January 2023 indicates widespread water deficits in the U.S. West, Rockies, Southwest, Central and Southern Plains, along the East Coast from the nation’s capital through Florida, and skirting the Gulf Coast.

Anomalies will be exceptional and widespread in California and in the Lower Colorado River Basin of southern Arizona, but exceptional deficits are also predicted for many other areas of the West including southern Utah and Nevada, the Salmon River Mountains in Idaho, and central Oregon.



Based on observed data through April 2022 and forecasts through January 2023

In the Plains, deficits will be exceptional in western Nebraska and the Llano Estacado in West Texas, and severe to extreme in central Texas. Most deficits in the Central Plains States will be moderate to severe though more intense conditions are forecast in the Oklahoma Panhandle. Deficits of varying intensity are expected through the Rocky Mountain States. In the Northern Plains, normal conditions will be interrupted by widespread, severe surpluses in the Red River Watershed and severe deficits along the Missouri River.

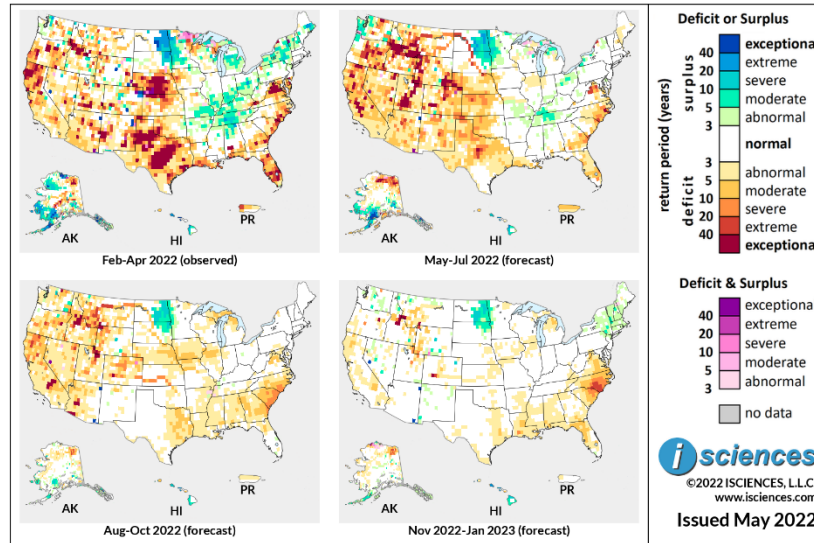
On the East Coast, deficits of varying intensity are forecast from the D.C. region through Florida. Anomalies will be intense in northern Virginia, along the coast from North Carolina through Georgia, and in Florida from Clearwater to Fort Lauderdale. Some deficits are expected in southern Alabama and Mississippi and severe deficits across southern Louisiana.

While much of the Mississippi region, Great Lakes, and Northeast can expect near-normal water conditions, moderate deficits are forecast in Michigan’s Upper Peninsula and some isolated, small pockets of surplus in the Ohio River Watershed and Northeast, including a severe pocket near Bangor, Maine.

Outside the contiguous U.S., Alaska can expect deficits in the central north and northeast, and surpluses near Juneau and Nome, west of Bethel, reaching from the Alaska Peninsula inland to the Kuskokwim River, and at the eastern end of the Alaska Range. Surpluses are forecast in Hawaii and moderate deficits in western Puerto Rico.

The 3-month maps (below) show the evolving conditions in more detail.

**ISciences Water Anomalies Forecast
United States: February 2022 - January 2023**



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates that deficits will increase in the U.S., covering much of its western half. The West, Rockies, Southwest, Central and Southern Plains, and much of the Pacific Northwest can expect deficit anomalies. Areas with a forecast of intense deficit include central Idaho into Montana, central Utah, southeastern and far western Wyoming, central Oregon, and California’s San Joaquin Valley. Deficits in the Central and Southern Plains will be moderate to severe overall, though more intense in central Texas. Deficits in south Texas will retreat. In the Pacific Northwest, surpluses are forecast in the Cascades north of Portland. In the Northern Plains, intense deficits will follow the Missouri River, and widespread surpluses will persist in the Red River Basin of North Dakota, extending into South Dakota and Minnesota. Mixed conditions are forecast in the upper Great Lakes, and pockets of moderate surplus in the Ohio River Watershed in Ohio and from western Kentucky into Tennessee. On the East Coast, deficits will downgrade but persist from northern Virginia through Florida.

From August through October, deficits will downgrade in the West and shrink considerably in the Southern Plains and Southwest leaving near-normal conditions in New Mexico and the western half of Texas, but moderate deficits will increase in eastern Texas. Deficits on the Missouri will downgrade but severe deficits will emerge on the Arkansas River and moderate deficits will emerge in Iowa, Missouri, northern Illinois, and northern Michigan. Moderate to severe surpluses will persist from eastern North Dakota into its southern namesake. The Ohio River Basin and Northeast can expect near-normal conditions. Deficits will continue from Virginia into northern Florida, moderating overall though severe anomalies are forecast in eastern regions of the Carolinas.

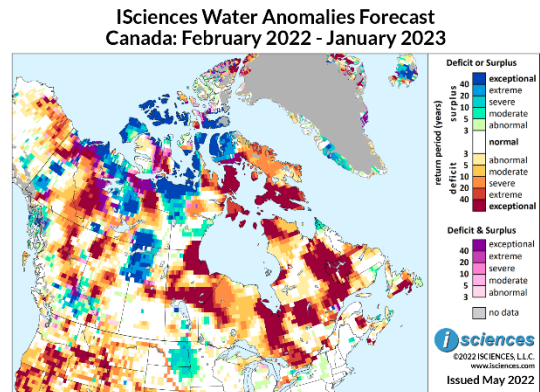
The forecast for the final months – November through January – indicates deficits from Virginia through the Carolinas, and in Florida, the northern Rockies, and pockets in Louisiana, northern Michigan, and California. Surpluses will persist from eastern North Dakota into South Dakota.

Please note that WSIM forecast skill declines with longer lead times.

Canada

The 12-month outlook for Canada through January 2023 indicates widespread water deficits in the eastern half of the nation.

Deficits will be exceptional in many regions including southern Newfoundland, the Miramichi River watershed in east-central New Brunswick, the Smallwood Reservoir region in Labrador, the Manicouagan Reservoir region in Quebec, and a vast area near Lake Mistassini. Deficits will be somewhat less intense in Southern Ontario east of Georgian Bay, while a small pocket of surplus is forecast west of Toronto. Exceptional deficits are expected in a broad column along Ontario's eastern border reaching James Bay. Deficits will be widespread in Northern Ontario and will include exceptional anomalies in Kenora District.



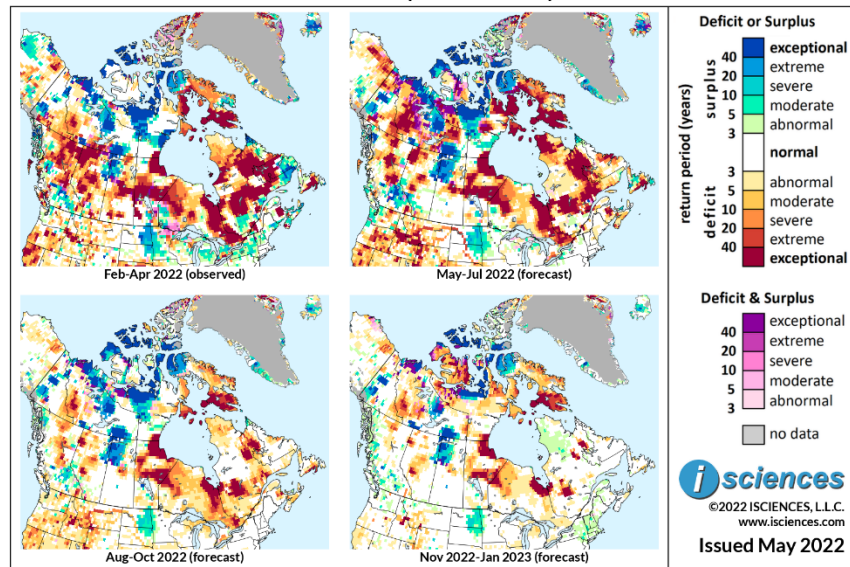
Based on observed data through April 2022 and forecasts through January 2023

Widespread exceptional deficits will belt central Manitoba and are also forecast in the province's northeast reaching Hudson Bay. Some pockets of severe deficit are expected in southern Manitoba, but surpluses are forecast near the U.S. border in the Red River Watershed. Elsewhere in the Prairie Provinces, nearly normal conditions are forecast across southern Saskatchewan. Central Saskatchewan can expect deficits, but widespread surpluses are forecast in the northwest quadrant leading west past Fort McMurray, Alberta. Exceptional deficits are expected in northwestern Alberta, deficits of varying intensity in the Middle Athabasca River region, surpluses north of Banff, mixed conditions in the south.

Surpluses are forecast in the Thompson River Watershed of southern British Columbia leading east into the Columbia Watershed. Deficits are expected at opposite ends of the province's southern region in Vancouver Island and in East Kootenay. The Upper Fraser and Nechako River Watersheds will see intense deficits as will British Columbia's central far north from Williston Lake well into Yukon and Northwest Territories.

The 3-month maps (below) show the evolving conditions in more detail.

**ISciences Water Anomalies Forecast
Canada: February 2022 - January 2023**



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates that vast areas of intense deficit will persist from Quebec (QB) into Labrador and surrounding Lake Mistassini and will emerge in the Ungava Peninsula in Quebec's far north. Deficits will also persist in eastern Newfoundland while surpluses emerge near St. John's and in the Exploits River Basin. Deficits will continue in east-central New Brunswick and emerge in Nova Scotia. In Southern Ontario, deficits will be moderate in Ottawa but intense east of Georgian Bay and will increase north of Lake Erie as surpluses retreat. A broad column of exceptional deficit will persist along the province's eastern border. Deficits will continue in much of Northern Ontario though surpluses are forecast on the U.S. border near International Falls and also farther north around Trout Lake in Kenora.

In the southern regions of the Prairie Provinces, near normal conditions are expected in Saskatchewan (SK) and mixed conditions in Manitoba (MB) and Alberta (AB). Intense deficits will persist in central regions of the Prairies and northern MB and AB, while intense surpluses persist from northwestern SK into AB and increase in the Canadian Rockies of southern AB. In southern British Columbia (BC), surpluses will intensify in the North Thompson and Quesnel River Watersheds. Deficits will retreat from Vancouver Island but persist with intensity in the Upper Fraser and Nechako River Watersheds and from Williston Lake in the far north into Yukon and Northwest Territories. Surpluses will emerge in a pocket near Fort St. John.

From August through October, deficits will shrink and downgrade somewhat in eastern Canada as surpluses nearly disappear. Anomalies will persist in the Prairies though deficits will downgrade a bit and surpluses in southern AB will shrink. Anomalies will shrink and downgrade in BC.

The forecast for the final months – November through January – indicates deficits in northern MB, Northern Ontario, and pockets in Quebec and AB. Scattered pockets of surplus are expected in BC with a pocket of deficit in the far north. Please note that WSIM forecast skill declines with longer lead times.

Mexico, Central America, and the Caribbean

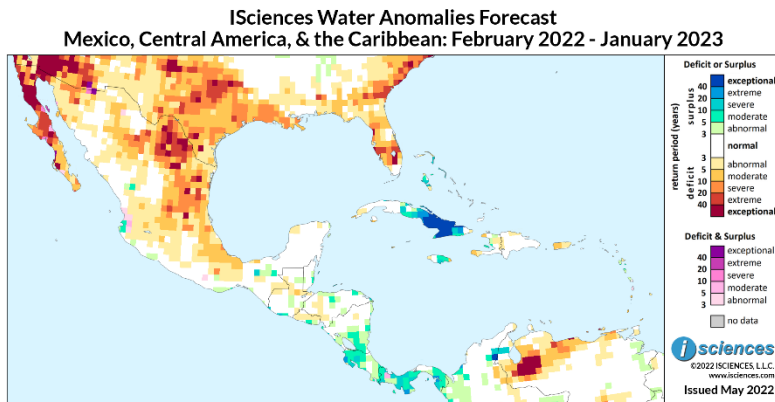
The 12-month forecast ending January 2023 indicates widespread water deficits of varying intensity in the Baja Peninsula and Mexico's north-central and eastern states.

Anomalies will be severe to exceptional in much of Baja and exceptional in the Colorado River Delta. Extreme to exceptional deficits are expected in Coahuila and into Nuevo León, and moderate to severe deficits in Chihuahua.

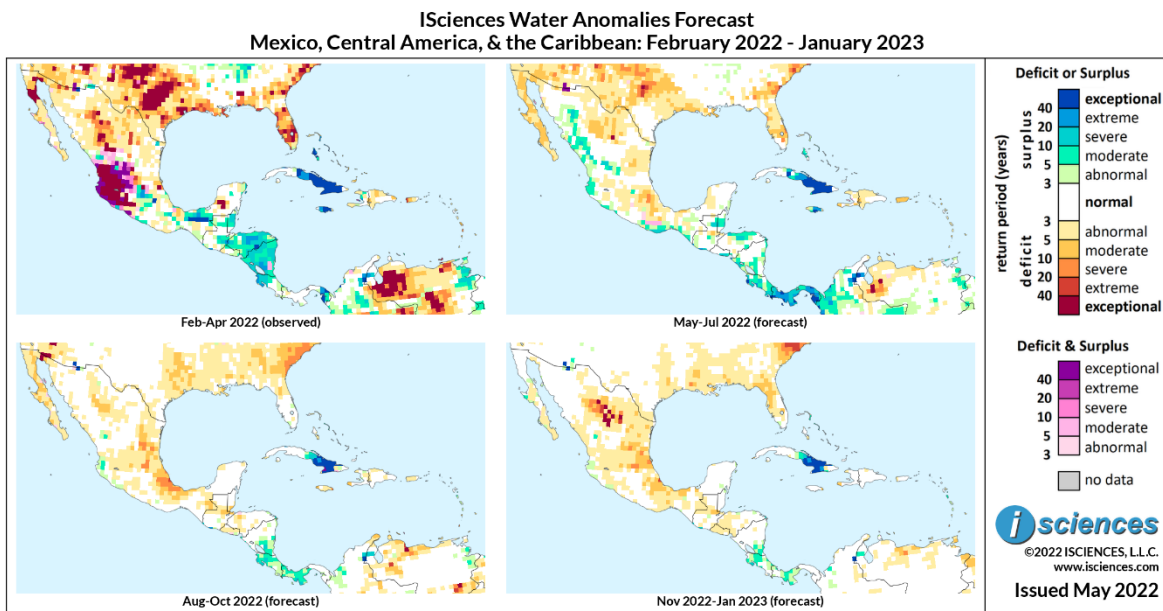
From Tamaulipas on the Gulf of Mexico through the land-locked states of San Luis Potosi and Querétaro, deficits will be severe overall, moderating to the south through Veracruz and Puebla.

In Central America, moderate to severe surpluses are expected in pockets from southern Nicaragua through Panama. Surpluses are also forecast in Jamaica, Cuba, and the central Bahamas.

The 3-month maps (below) show the evolving conditions in more detail.



Based on observed data through April 2022 and forecasts through January 2023



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates moderate deficits in Baja, from southeastern Chihuahua into Coahuila, and a pocket in the southwest corner of Tamaulipas. In south-central Mexico, moderate to severe deficits are expected from Puebla into nearby states. Moderate to severe surpluses are predicted

through much of the Sierra Madre Occidental range in western Mexico. Surpluses are also forecast on the Pacific in western Jalisco and coastal Oaxaca and Chiapas.

In Central America, pockets of surplus are expected from Belize through Nicaragua, but surpluses will be more widespread in Costa Rica and Panama with severe to extreme anomalies in Panama. Surpluses are also forecast in Jamaica, Cuba, and the central Bahamas. Generally mild deficits are forecast for Hispaniola.

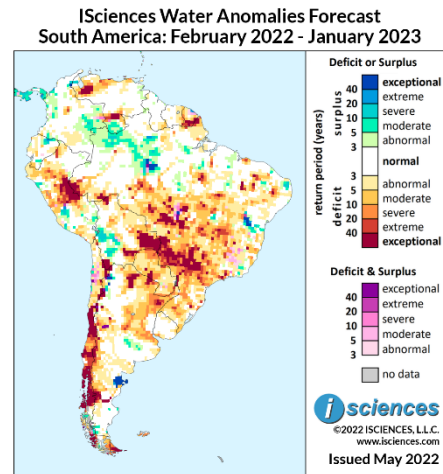
From August through October, moderate deficits will linger in Baja and Chihuahua. Moderate to severe deficits are expected in the east from Nuevo León south into Tabasco, reaching into nearby land-locked states as well. Deficits will reach extreme intensity in the city of Veracruz. Surpluses in the west will nearly disappear. Moderate surpluses are forecast from southern Nicaragua through western Panama, and a few small pockets of moderate deficit around the Gulf of Honduras. Surpluses will retreat from Jamaica as some limited areas of deficit emerge. Near-normal conditions are expected in Hispaniola, while surpluses persist in parts of Cuba but shrink in the Bahamas.

The forecast for the final three months – November through January – indicates that deficits will increase and intensify at the intersection of Chihuahua, Coahuila, and Durango, Mexico. Moderate to severe deficits are forecast in the east from southern Tamaulipas through Veracruz State and its smaller, inland neighbors, around the Gulf to Tabasco. A few pockets of moderate surplus will linger in southern Central America, and surpluses are forecast in central Cuba and the central Bahamas.

Please note that WSIM forecast skill declines with longer lead times.

South America

The 12-month forecast through January 2023 indicates widespread water deficits of varying intensity in Brazil's Central West region through the Southeast and South, as well as pockets of deficit elsewhere. Deficits will be moderate overall but more intense in several areas including exceptional deficits in Mato Grosso, Mato Grosso do Sul, and São Paulo State. Exceptional deficits are also expected on the Paraná River from the Ilha Solteira Reservoir through the Itaipu Reservoir. Some pockets of deficit are expected in the Northeast region, particularly in Piauí, along with pockets of surplus in Rio Grande do Norte and central Bahia.



Based on observed data through April 2022 and forecasts through January 2023

Surpluses are forecast in the northern Amazon Basin of Brazil, moderate overall but exceptional in the central reaches of the Madeira River, a southern tributary of the Amazon. Surpluses in the northern basin will reach into Venezuela's southern tip and into Columbia.

Across the northern arc of the continent, deficits, including exceptional anomalies, are forecast in a pocket north of Bogota, Colombia; from Merida, Venezuela past Caracas; in a belt between the Ventuari and Upper Orinoco Rivers in southern Venezuela; and in French Guiana. Surpluses are forecast in a pocket north of Quito, Ecuador.

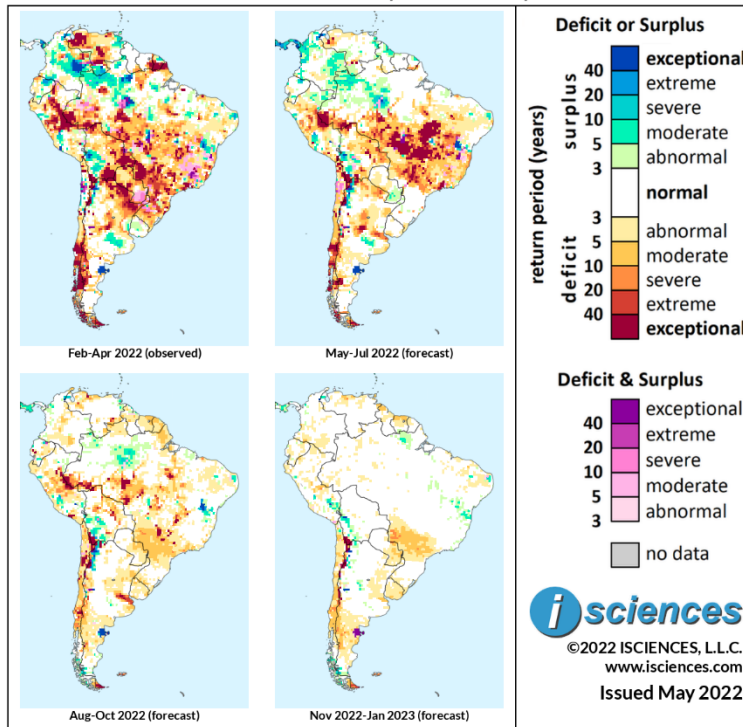
In Peru, exceptional deficits are forecast in the middle reaches of the Ucayali River Watershed, and deficits of varying intensity in much of central Peru. Areas of surpluses include the region surrounding Huancayo in the central Peruvian Andes and from Lake Titicaca in the south through La Paz, Bolivia where anomalies will be severe. Surpluses will also be severe in the Upper Pilcomayo and Upper Grande River regions of southwestern Bolivia. Deficits are forecast in pockets elsewhere in Bolivia, exceptional in the east and extreme south.

Deficits are forecast in Paraguay and in northern Argentina where anomalies will be exceptional in pockets of the Chaco region and in the Iberá Wetlands. Deficits will be severe on the Paraná River as it flows to the Atlantic. The northern and eastern Pampas can also expect deficits, and a pocket of moderate surplus is forecast in the central Pampas. Exceptional surpluses are forecast in coastal Chubut Province in Patagonia.

Mixed conditions are predicted for northern Chile and exceptional deficits in a vast path from La Serena through most of the nation's southern extent. Deficits in Chilean Patagonia will cross into Argentina. Exceptional deficits are forecast in Tierra del Fuego and severe deficits in the Falklands.

The 3-month maps (below) for the same 12-month period show the evolving conditions in greater detail.

ISciences Water Anomalies Forecast
South America: February 2022 - January 2023



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates widespread deficits across central Brazil including exceptional deficits, particularly in Tocantins, Mato Grosso, and Goiás. Surpluses are forecast in the northwestern Amazon Basin of Brazil and into Colombia and northeastern Peru. Surpluses are also forecast from just north of Quito, Ecuador through western Colombia and in pockets of coastal Guyana and French Guiana. Deficits will persist in a pocket surrounding Merida, Venezuela. Widespread deficits are forecast in central Peru, exceptional in the Department of Ucayali in the Amazon rainforest. Surpluses will persist near Huancayo. Bolivia can expect surpluses in the southwest that will be intense in La Paz, and deficits in many other regions. Deficits are forecast throughout much of Chile with intense anomalies dominating much of the nation south of Santiago. In Argentina, deficits of varying intensity are forecast in the Gran Chaco in the north, the northern and eastern Pampas, several rivers in southern Patagonia, and Tierra del Fuego. Surpluses are forecast in the Andes in the northwest, a pocket in the central Pampas, and coastal Chubut.

From August through October, anomalies will shrink and downgrade. In Brazil, generally moderate deficits are forecast for Mato Grosso do Sul, São Paulo, and Paraná, but anomalies will be more intense in some pockets of central Brazil and in Acre in the west. Moderate surpluses will persist in eastern Amazonas and surpluses will increase in central Bahia between the São Francisco and Contas (de Contas) Rivers. Some pockets of deficit, primarily moderate, are forecast in Colombia, Venezuela, the Guianas, and Amapá in Brazil. Deficits will remain intense in Ucayali, Peru, moderating through central Peru. Southwestern Bolivia will continue to see surpluses. Deficits in Bolivia will shrink as will those in

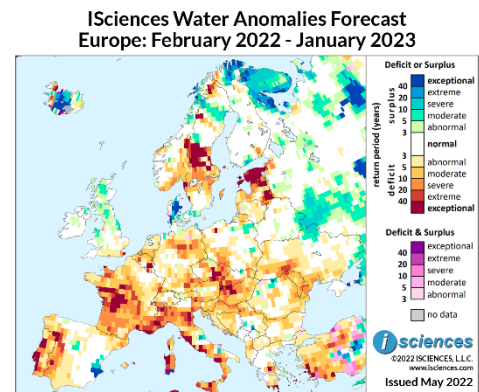
Argentina. However, deficits will persist with increased intensity north of the Salado River in Buenos Aires Province. Deficits in Chile will downgrade overall but intensify in a pocket north of Copiapo.

The final quarter – November through January – indicates deficits, primarily moderate, in Mato Grosso do Sul, São Paulo, and Paraná, Brazil; Chile and Patagonian Argentina; and pockets in the coastal Guianas. Surpluses are forecast in pockets of eastern Brazil and from Cusco, Peru past La Paz, Bolivia.

Please note that WSIM forecast skill declines with longer lead times.

Europe

The 12-month forecast through January 2023 indicates water deficits of varying intensity in many regions of Europe. Anomalies will be particularly widespread in France and Portugal and will include exceptional deficits along parts of the Middle and Lower Loire River and the Vienne River region, a tributary of the Loire, the French Riviera, and pockets in Portugal, notably the Lower Tagus River into Lisbon. Deficits will reach across the Portuguese border into Spain. Intense surpluses are expected on the Mediterranean Coast of Spain in the Valencia region.



Based on observed data through April 2022 and forecasts through January 2023

Deficits will be intense in northern Italy, along its Tyrrhenian Coast, in the southern Apennines, and in Sicily and Sardinia. Deficits will be severe to exceptional on the Po River. Surpluses are expected in a pocket of Umbria. Deficits of varying intensity and extent are predicted in Switzerland, Austria, Netherlands, Germany, western Poland, and the northern Balkans. Intense deficits are forecast for southern Belgium and from central Czech Republic to Budapest, Hungary.

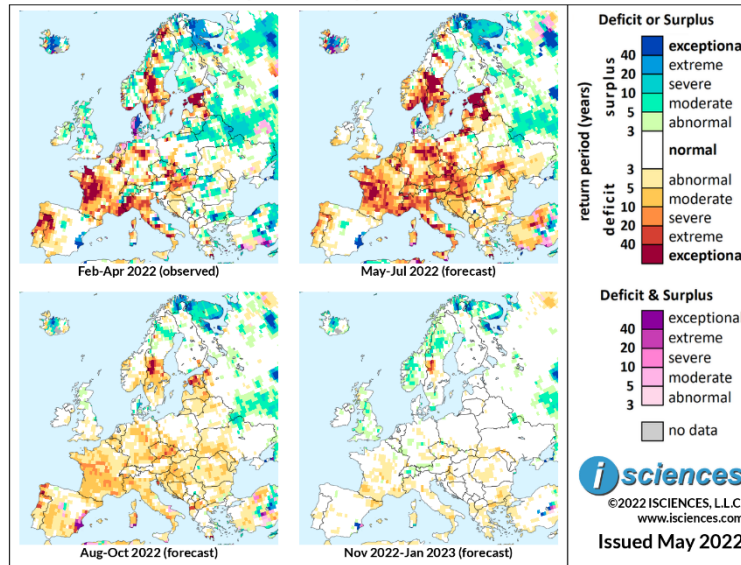
In Eastern Europe, deficits are expected from southern Ukraine through Moldova. To the south, pockets of deficit are forecast in Romania, Bulgaria, Albania, and Greece.

Some pockets of moderate surplus are forecast in eastern Poland, northern Romania, southern Serbia, Wales, and the northern U.K.

In Northern Europe, intense surpluses are forecast in Denmark, central Iceland, and Arctic Norway, and in European Russia in Murmansk, the Middle Volga River region, and Vychegda Lowland. Areas expected to have surpluses of lesser intensity include southern Norbotten in Sweden, the Svernya Dvina River Watershed in northern Russia, and the Desna River Watershed from Russia into Ukraine. Exceptional water deficits are forecast in central Sweden's Dalälven River Watershed, downgrading somewhat as they reach south and moderating through Oslo, Norway and along Norway's southern coast. In the Baltics, deficits will be exceptional in Estonia and of varying intensity in Latvia.

The 3-month composites (below) for the same 12-month period show the evolving conditions.

**ISciences Water Anomalies Forecast
Europe: February 2022 - January 2023**



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates that water deficits will increase, becoming widespread in Western and Central Europe and reaching into Eastern Europe and the Balkans as surpluses shrink. Deficits will be severe to exceptional in many regions including the Loire and Vienne River region and the Durance River region in France; Vatican City and northern Italy; the Drava, Danube, and Oder Rivers; eastern Czech Republic; and from northern Moldova past the Dniester River into Ukraine. Deficits will downgrade in Portugal, shrinking in the nearby regions of Spain. Intense surpluses will persist in Valencia and a moderate pocket north of Madrid.

Northern Europe can expect widespread deficits including intense deficits from southeastern Norway through Sweden's southern half into the Baltics with exceptional deficits in Estonia, eastern Latvia, and central Sweden. Some moderate deficits will emerge in southern England and Ireland. Surpluses are forecast in eastern Denmark, Sweden's Norbotten County, Arctic Norway, European Russia, and central Iceland.

From August through October, deficits will shrink and moderate overall but remain widespread. Severe deficits will persist in pockets of France and eastern Czech Republic, and deficits of greater intensity in Estonia, central Sweden's Dalarna and Jämtland Counties, and pockets in northern Portugal and Galicia, Spain. Moderate deficits will increase in Spain, with conditions in Valencia beginning to transition, and deficits will intensify near Albania's capital, Tirana. Surpluses will shrink and downgrade slightly in Northern Europe and Russia.

The forecast for November through January indicates normal conditions for many areas with some mild to moderate deficits in Central and Eastern Europe and the Balkans. Surpluses will shrink in Russia, increase in Northern Europe, and emerge in pockets of the U.K. Deficits will linger in central Sweden.

Please note that WSIM forecast skill declines with longer lead times.

Africa

The 12-month forecast through January 2023 indicates widespread, intense water deficits across much of North Africa. Intense surpluses are expected in pockets of coastal Libya including Benghazi, and mixed conditions in Egypt. In West Africa, moderate deficits are forecast for Guinea and Sierra Leone.

Surpluses are forecast in a broad belt just south of the Sahel from central Mali into Eritrea and the Tigray and Afar regions of northern Ethiopia. Regions with exceptional surplus include Lake Débo in the Inner Niger Delta of central Mali; central Nigeria surrounding the capital, Abuja; and near the city of Kano in northern Nigeria. Surpluses will be widespread in South Sudan. Transitions (pink/purple) are expected in the Ethiopian Highlands.

In the Horn of Africa, deficits are forecast in Somaliland, south of the Genale River in southern Ethiopia, and in pockets of southern Somalia and Kenya. Transitional conditions along with exceptional surpluses are forecast for the Nugaal Valley.

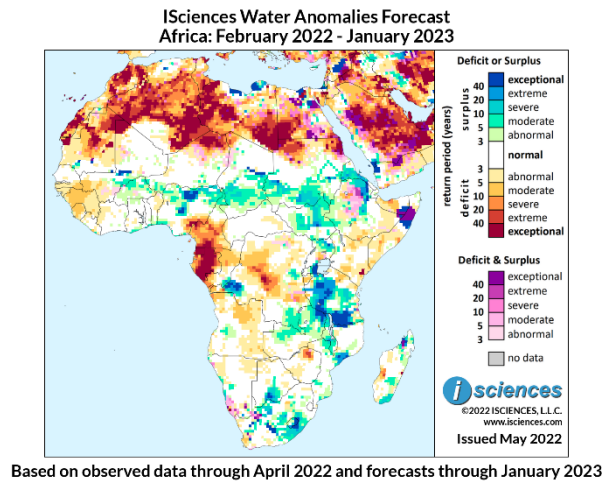
Along the Gulf of Guinea, deficits will be intense from southeastern Nigeria through Cameroon, becoming exceptional in Equatorial Guinea and Gabon, but moderating as they reach inland into northern Republic of the Congo. In the heart of the continent, severe to exceptional deficits are expected in the central Congo Basin in Democratic Republic of the Congo (DRC), moderating in the north. Intense surpluses are forecast at the western edge of the basin near Kinshasa and Brazzaville, and moderate surpluses in southeastern DRC and a pocket west of Rwanda. Burundi will see moderate deficits. Surpluses are forecast in northern Uganda, eastern Rwanda, and throughout much of Tanzania where anomalies will be intense.

Surpluses of generally lesser intensity are forecast in Zambia, Malawi, and central Mozambique. Extreme deficits are predicted north of Harare in Zimbabwe, and moderate deficits in northern Angola.

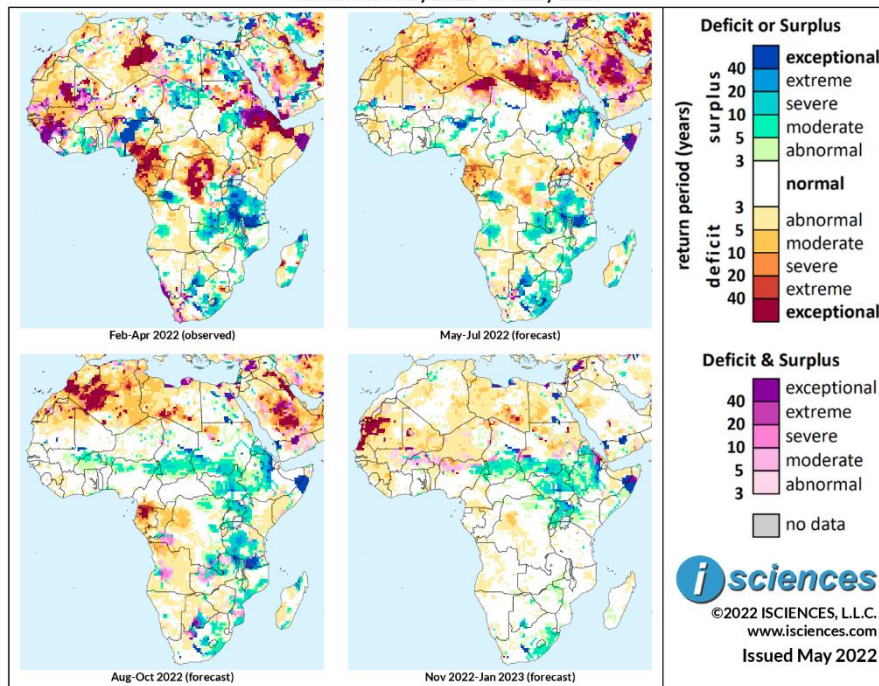
In southern Africa, surpluses are forecast from south-central Botswana into South Africa, and widespread surpluses are expected in Eastern Cape, southern KwaZulu-Natal, Free State, and Lesotho.

In Madagascar, surpluses are forecast in the far north, a pocket around Fianarantsoa, and in the southeast. Deficits are expected in the lower Mania River Watershed along the central west coast.

The 3-month maps (below) show the evolving conditions in greater detail.



ISciences Water Anomalies Forecast
Africa: February 2022 - January 2023



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates widespread deficits across North Africa, moderate overall but intense in western Algeria, northern Niger, and southeastern Libya into Sudan. Mixed conditions are forecast in Egypt and pockets of surplus in coastal Libya and Algeria. Scattered surpluses are forecast in the Sahel and to the south, including northern Senegal, northern and coastal Nigeria, southeastern Sudan into South Sudan, and Eritrea into Ethiopia. Anomalies will be intense surrounding Kano, Nigeria. Deficits will shrink or downgrade from Cameroon through Gabon and central and northern DRC, but severe to extreme pockets are forecast. Uganda and Kenya can expect deficits. Surpluses are forecast for Tanzania, Zambia, southeastern DRC and Kinshasa/Brazzaville, and Malawi. Surpluses will increase in Angola around Huambo. Surpluses are also expected in Mozambique, south-central Botswana, many regions in eastern and northern South Africa, and in Lesotho.

From August through October, exceptional deficits will emerge in central Morocco and western Algeria while deficits in Africa's northeast shrink and downgrade. Surpluses, primarily moderate, will increase in a band just south of the Sahel, notably in southern Sudan, South Sudan, and Ethiopia. Kenya will transition to surplus in the west as deficits retreat, and surpluses will emerge in Uganda, Rwanda, and a pocket in northern DRC. Deficits will shrink in DRC, intensify in northern Gabon, and increase in northwestern Angola. Surpluses will persist in Tanzania but shrink or downgrade elsewhere in the south.

In the final quarter – November through January – deficits are forecast in Mauritania, Senegal, and southern Libya, and surpluses from far eastern Nigeria into central Ethiopia and northern Eritrea. Surpluses are also forecast in Uganda, Rwanda, and eastern South Africa.

Please note that WSIM forecast skill declines with longer lead times.

Middle East

The forecast for the 12-month period ending January 2023 indicates widespread water deficits of varying intensity in Saudi Arabia and the small Persian Gulf nations, much of Iraq, central and northeastern Iran, and several regions in Turkey.

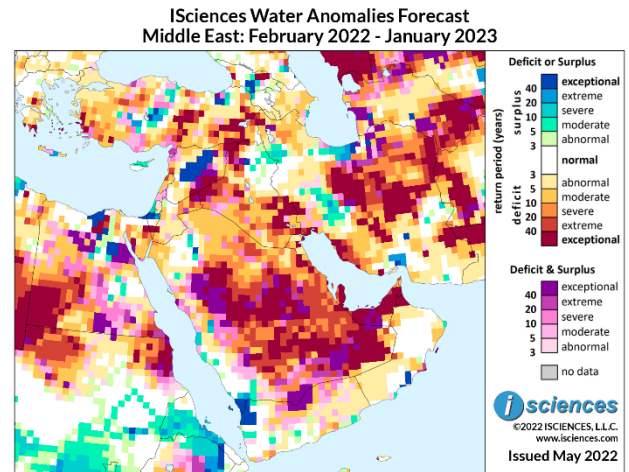
On the Arabian Peninsula, severe to exceptional deficits are forecast throughout much of Saudi Arabia though mixed conditions are expected in the provinces on the central shore of the Red Sea. In Yemen, exceptional surpluses are forecast northeast of Sanaa, and deficits and transitional conditions (pink/purple) on the central Saudi border. Exceptional deficits are expected in Qatar and United Arab Emirates.

In Iraq, deficits of varying intensity are forecast west of the Tigris and also in Kuwait. Deficits will be exceptional on the Gharraf Canal in southern Iraq, and pockets of moderate surplus are forecast north of Kirkuk. Iran can expect exceptional deficits in the central provinces and in Bushehr Province on the Persian Gulf. Surpluses are expected from Tehran to the Caspian Sea Coast, in a pocket of the south near the Strait of Hormuz, and in the central Zagros Mountains.

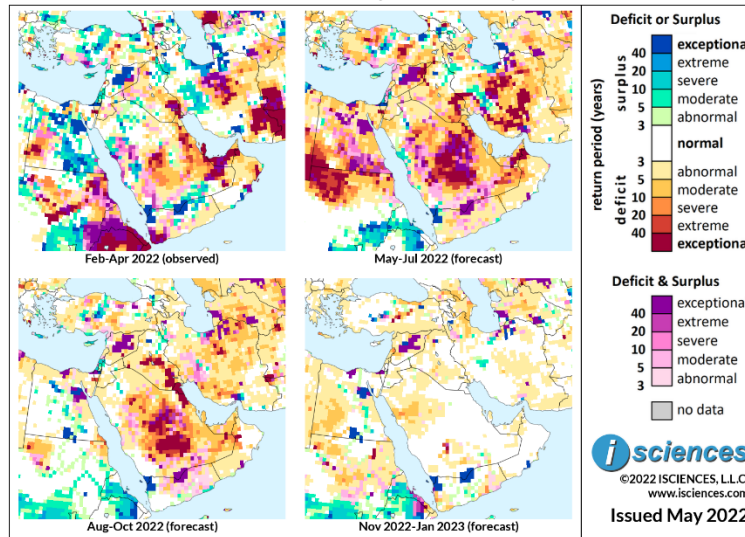
Mixed conditions are forecast in the Levant including surpluses in central Israel, Cyprus, and central Syria with deficits elsewhere. In Turkey, deficits are forecast in the west, surpluses from Konya past Lake Tuz, and exceptional deficits in a large area west of the Keban Dam and also southwest of Lake Van.

Mixed conditions are forecast in Georgia, and moderate deficits in Azerbaijan.

The 3-month maps (below) show the evolving conditions in greater detail.



**ISciences Water Anomalies Forecast
Middle East: February 2022 - January 2023**



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates widespread deficits in the region, especially intense in Saudi Arabia and Iran. Anomalies will be exceptional in Riyadh Province, Saudi Arabia, though transitions are also forecast. A pocket of moderate surplus is forecast on Saudi Arabia’s central Red Sea Coast. Mild deficits and transitional conditions are expected in Yemen and Oman, but intense surpluses will persist north of Sanaa. In Iraq, generally moderate deficits are expected west of the Euphrates, exceptional deficits along the Gharraf Canal in the south, and some pockets of surplus near Kirkuk leading into Iran. In Iran, deficits are expected along the Persian Gulf, and from the Kuh Rud Mountains through the center of the nation into the northeast. Deficits will be exceptional in Fars, Kerman, and Isfahan Provinces. Surpluses are forecast along the central Caspian Coast and through the central Zagros Mountains. In the Levant, deficits and transitional conditions are expected with some surpluses in Gaza, central Israel, and Cyprus. Deficits are forecast in western Turkey, and surpluses from Konya past Lake Tuz and a pocket in the Pontic Mountains on the Black Sea Coast. Intense deficits are forecast in Anatolia from the Upper Cehan River region to the Keban Dam on the Firat (Euphrates), and moderate deficits in southeastern Turkey. Surpluses are forecast west of Tbilisi, Georgia, and deficits west of Baku, Azerbaijan.

From August through October, deficits will shrink and downgrade overall, but intense anomalies will persist in Riyadh Province, Saudi Arabia, and will emerge from Baghdad through Kuwait. Surpluses are forecast in pockets of northeastern Iraq; near Bandar-e-Abbas, Iran; north of Sanaa, Yemen; central Israel; Cyprus; the Kizilirmak River Watershed in Anatolia; and on the Kura River in central Georgia.

In the final quarter – November through January – deficits will shrink, returning many areas to normal water conditions. Deficits are expected in Central Anatolia, Georgia, Azerbaijan into Iran, Lebanon, and pockets in Riyadh and Medina Provinces in Saudi Arabia. Surpluses will persist north of Sanaa and re-emerge on the central Saudi-Yemen border.

Please note that WSIM forecast skill declines with longer lead times.

Central Asia and Russia

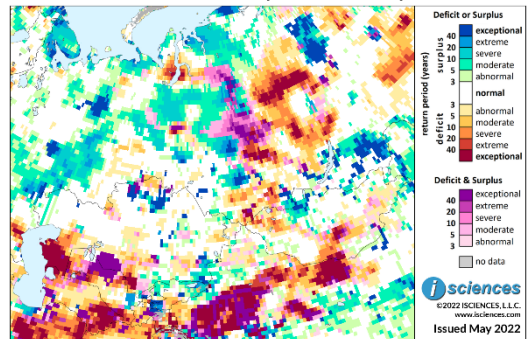
The 12-month forecast through January 2023 indicates exceptional water deficits in western Kazakhstan’s Mangystau Region and in the Middle Reaches of the Syr Darya River in the south. In both regions, deficits will downgrade as they reach north. Exceptional surpluses are expected in Akmola and Kostanay Regions in far northern Kazakhstan, and moderate deficits in the nation’s northernmost tip.

South of Lake Balkhash, moderate deficits are forecast in the Lower Ile River region though surpluses are forecast in Alatau Mountains nearby and severe surpluses are forecast near Kapchagay Reservoir on the Ile, moderating near the Chinese border. Deficits are expected throughout Turkmenistan and will be intense in the east. Uzbekistan will see deficits in most regions though surpluses are expected around Aydar Lake in the southeast. In Tajikistan, deficits and transitional conditions (pink/purple) are forecast. Mixed conditions are expected in Kyrgyzstan including surpluses in the east near Lake Issyk Kul.

West of the Urals in Russia, surpluses are forecast in the Vycheгда Lowland and coastal north, the Middle Volga River Region, Trans-Volga, and Volga Uplands. Anomalies will be exceptional in the Vycheгда Lowland, Middle Volga, and southeast of Saratov. East of the Urals, moderate deficits are forecast in the Tura River region and intense deficits spanning the Gulf of Ob in the north. Widespread surpluses are forecast in much of the Western Siberian Plain with transitions at its eastern edge leading to widespread deficits of varying intensity in the Central Siberian Plateau. In Irkutsk Oblast north of Lake Baikal deficits are forecast, but exceptional surpluses are expected in Transbaikalia’s Zabaykalsky Krai. Surpluses will also be exceptional in the Tyung River Watershed of northern Sakha Republic. Deficits are forecast in the Lena River Delta and west of the Sea of Okhotsk.

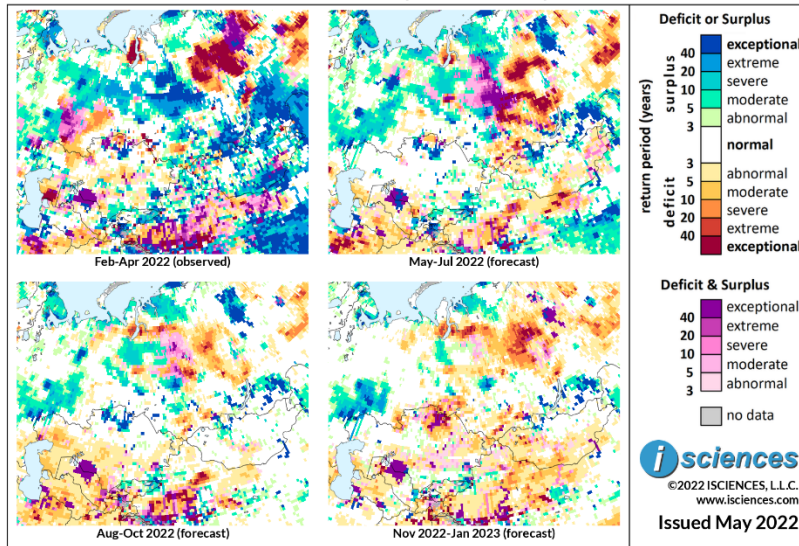
The 3-month composites (below) for the same 12-month period show the evolving conditions in more detail.

ISciences Water Anomalies Forecast
Central Asia: February 2022 - January 2023



Based on observed data through April 2022 and forecasts through January 2023

**ISciences Water Anomalies Forecast
Central Asia: February 2022 - January 2023**



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates surpluses in many regions west of the Urals in Russia. Deficits in the southern Urals and Tura River region will nearly disappear. In Russia’s Asian extent, surpluses are forecast in the Middle and Lower Reaches of the Ob River Watershed but intense deficits will persist spanning the Gulf of Ob, downgrading somewhat, and deficits will emerge in a pocket near Surgut. Transitional conditions are expected in the Lower Yenisei River region and intense deficits in its eastern tributaries. Exceptional surpluses will re-emerge in the Tyung River area of northern Sakha Republic. Surpluses in Transbaikal will shrink but remain exceptional in central Zabaykalsky Krai. Intense deficits will persist near the Sea of Okhotsk and will emerge in the Lena Delta. Moderate deficits will emerge in the western Stanovoy Range in southern Sakha.

In Central Asia, deficits in Mangystau, Kazakhstan, will moderate. Generally moderate deficits are forecast for Kazakhstan’s northern tip and a pocket in the far south, much of Turkmenistan, south of the Zarafshon River in Uzbekistan, and eastern Tajikistan. Surpluses are forecast in Akmola, Kostanay, and Almaty Regions in Kazakhstan; around Aydar Lake in Uzbekistan; from central Tajikistan into Kyrgyzstan; and across Kyrgyzstan’s northern breadth.

From August through October, anomalies in Russia will shrink overall, persisting in the same distribution pattern as in the prior forecast. Moderate deficits will retreat from far northern Kazakhstan but will persist in Mangystau and the far south and emerge in the northwest and a pocket north of the Syr Darya River. Deficits and transitional conditions are expected in Turkmenistan and Uzbekistan. Surpluses will linger in Kyrgyzstan and mixed conditions are forecast in Tajikistan.

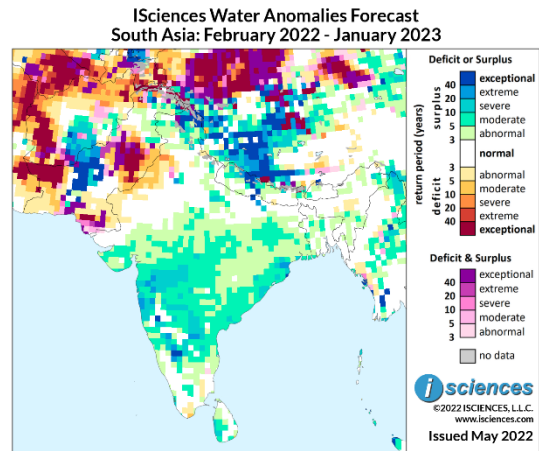
The forecast for the final months – November through January – indicates that deficits will increase in the Central Siberian Plateau and emerge in the Ural, Irtysh, and Ishim River Watersheds. Deficits will shrink in west Kazakhstan and emerge in the north and far east. Please note that WSIM forecast skill declines with longer lead times.

South Asia

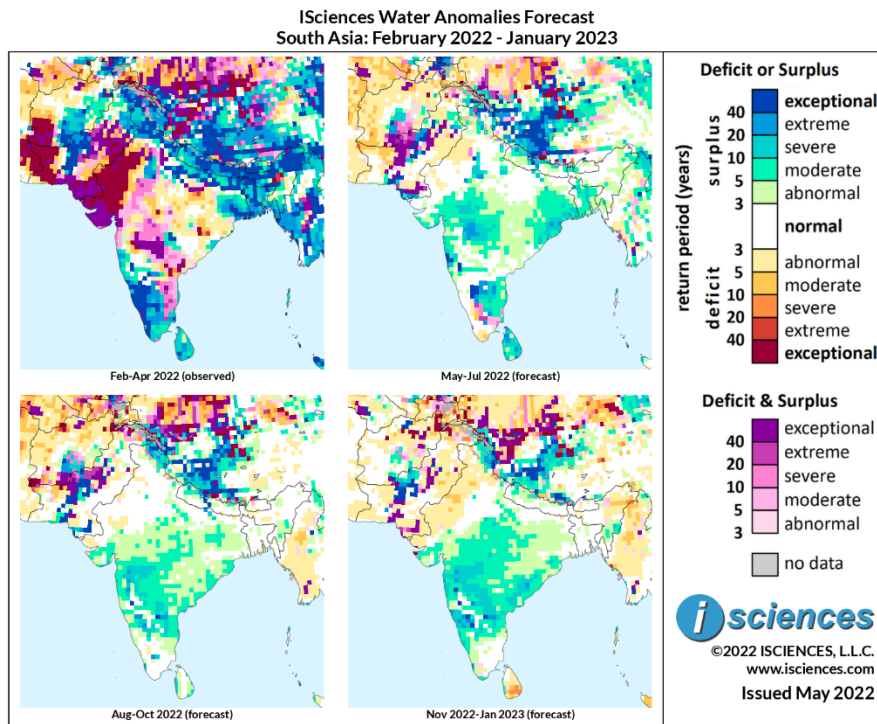
The 12-month forecast through January 2023 indicates widespread water surpluses across the breadth of central India and extending into the southern states. Surpluses will be moderate overall but more intense in Karnataka, Maharashtra, northern Odisha, and Andhra Pradesh. Other areas of surplus include the far north, pockets in Haryana and Uttar Pradesh, and the Gandak River in Bihar. Moderate deficits are expected in northwestern Rajasthan, and severe deficits in a pocket of Punjab.

Surpluses are forecast in western Nepal, intense on the Gandak River. A few small pockets of moderate surplus are predicted in Bangladesh north of Dhaka, and moderate surpluses in southwestern Sri Lanka that will become severe on the coast. Pakistan's forecast is a patchwork of conditions. Exceptional deficits and transitions are forecast in Punjab Province and near Hyderabad, and exceptional deficits in southern Balochistan. Intense surpluses are forecast surrounding Quetta and mixed conditions in Pakistan's far north. Surpluses in Balochistan will reach beyond Afghanistan's Kandahar Province, gradually downgrading. Deficits are forecast elsewhere in Afghanistan, exceptional in the southwest and moderate to severe in the north.

The 3-month composites (below) show the evolving conditions in greater detail.



Based on observed data through April 2022 and forecasts through January 2023



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates widespread surpluses across central India from Gujarat to West Bengal in a pattern of moderate to extreme surpluses in the west and east framing mild anomalies in Chhattisgarh. Surpluses will be extreme in north-central Maharashtra and exceptional in a pocket on Maharashtra's central coast. Surpluses are also forecast from southeastern Karnataka through southern Andhra Pradesh and northeastern Tamil Nadu and will be intense in Chitradurga District in central Karnataka. Other regions with a forecast of surplus include eastern Rajasthan into Haryana, a pocket in central Uttar Pradesh, along the Gandak River through Bihar, and India's far north.

Surpluses, primarily moderate to severe, are forecast throughout Sri Lanka, much of Bangladesh, and in northwestern Nepal and the Gandak River. Mixed conditions are predicted for Pakistan including moderate surpluses near Islamabad, intense surpluses in pockets of northern Balochistan, transitional conditions around Quetta, and moderate deficits southwest of Quetta. Surpluses and transitions are expected in the southeast including Karachi. In Afghanistan, transitional conditions are forecast in Kandahar Province, but surpluses will persist in its namesake city, reaching north. Deficits in the west will shrink and moderate.

From August through October, surpluses will downgrade somewhat in India, increase in the Deccan Plateau, withdraw from West Bengal, and emerge along the east coast from southern Odisha to Chennai. Surpluses in Rajasthan and Haryana will retreat and much of India's southern tip will return to normal. Near-normal conditions are forecast in Sri Lanka and Bangladesh, but surpluses will linger in Nepal. Water conditions in Pakistan will be mixed with surpluses near Karachi and surpluses and transitions surrounding Quetta. Surpluses and transitions are also forecast across the border into Kandahar Province, Afghanistan, and mild to moderate deficits elsewhere in the nation.

The forecast for the final months – November through January – indicates widespread surpluses in central India and into the south. Surpluses will persist from northern Balochistan, Pakistan through Kandahar, Afghanistan. Deficits are expected in northern Afghanistan and Pakistan, pockets in Rajasthan and Far Northeast India, and southeastern Sri Lanka.

Please note that WSIM forecast skill declines with longer lead times.

Southeast Asia and the Pacific

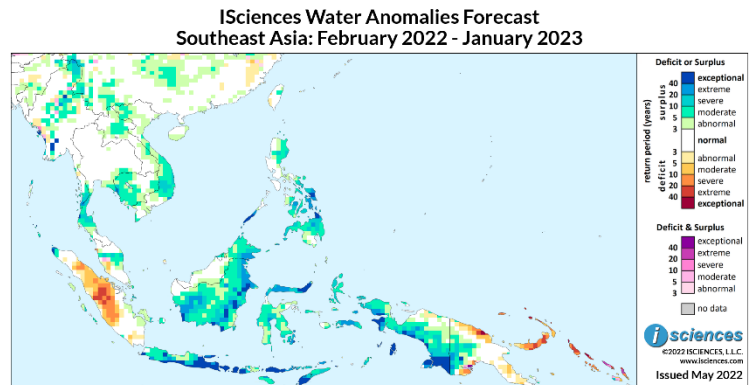
The 12-month forecast through January 2023 indicates near-normal water conditions in much of Thailand, and generally moderate surpluses in several other regions of Southeast Asia.

Surpluses are forecast through the Irrawaddy River Watershed in Myanmar, becoming intense approaching the delta. Moderate anomalies are expected in northern Laos, Cambodia's western half, and far northwestern Vietnam. Surpluses are also forecast in Vietnam from Da Nang through the Central Highlands and will be severe in the southern region of the Highlands. Likewise, moderate to severe surpluses are forecast in the peninsular regions of Myanmar, Thailand, and Malaysia, though a small pocket of moderate deficit is expected in Kuala Lumpur.

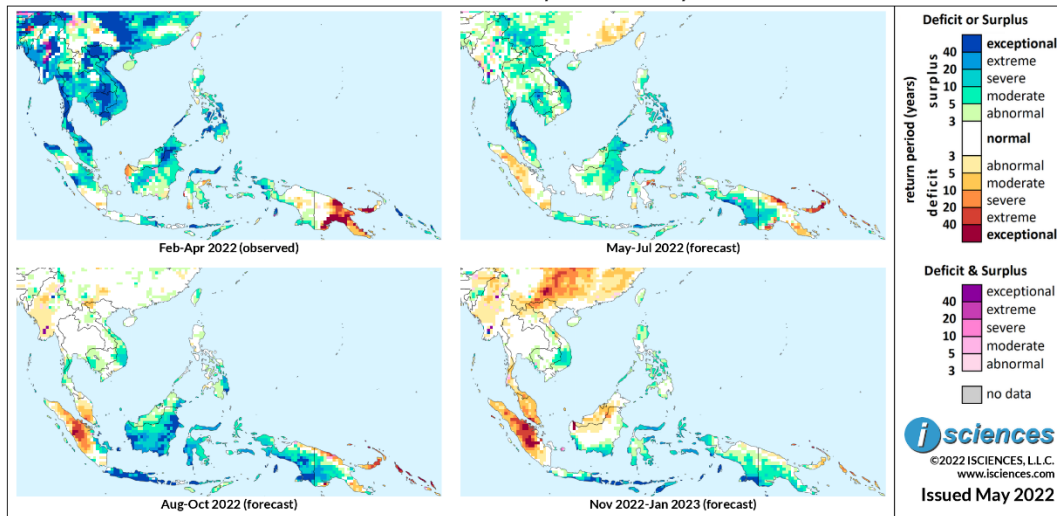
Widespread deficits ranging from moderate to extreme are forecast in central Sumatra, and surpluses in Banda Aceh in Sumatra's northern tip.

Widespread surpluses of varying intensity are expected in the Philippines and Indonesia. Anomalies will be severe to exceptional in the central Philippines, Palawan, and northern Mindanao. Though normal water conditions are forecast for most of Malaysian Borneo, surpluses are expected in the north as well as throughout the remainder of Borneo where many pockets of intense surplus are predicted. Elsewhere, areas with exceptional surplus include Java, Bali, Flores Island, Timor, and southern coastal areas of Papua, Indonesia. In Papua New Guinea, surpluses are expected in the west from the Highlands leading through the Fly River region in the southwest. Deficits are forecast in PNG near the Torres Strait in the south and intense deficits along the northern coast and in New Britain.

The 3-month maps (below) show the evolving conditions in more detail.



**ISciences Water Anomalies Forecast
Southeast Asia: February 2022 - January 2023**



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates that surpluses will shrink and downgrade in Southeast Asia but remain widespread. Greatest attrition will be in Myanmar where surpluses will linger in the far north and along the Salween River in the east; mixed conditions are expected in the Irrawaddy Watershed. Surpluses are forecast in northwestern and southwestern Thailand, northern Laos, western Cambodia, many regions of Vietnam, and the Malay Peninsula. Anomalies will be extreme to exceptional near Da Nang, Vietnam; north of Tonlé Sap, Cambodia; and in Peninsular Thailand. Surpluses are expected in the Philippines, intense in the central islands and Palawan. Peninsular Malaysia and northeastern Malaysian Borneo can expect surpluses as can central and eastern Indonesian Borneo. Other areas with a forecast of surplus include Java, the Lesser Sunda Islands, northern Sulawesi, and much of Papua, Indonesia, into PNG. Deficits will emerge in Sumatra and the Solomon Islands; persist in PNG near the Torres Strait, in the Bird’s Tail Peninsula, and along the northern coast; and increase in New Britain.

From August through October, surpluses will continue to shrink in Southeast Asia with anomalies persisting in Myanmar’s northern tip, Peninsular Thailand, southwestern Cambodia, and much of central Vietnam. Deficits are forecast in a pocket northwest of Mandalay, Myanmar; Vietnam’s northwest corner; and Peninsular Malaysia. Deficits will intensify in central Sumatra becoming extreme to exceptional, while surpluses emerge on the island’s southeastern coast. Surpluses are expected to shrink in the Philippines, persisting mainly in Mindanao, but will increase and intensify throughout Indonesia and PNG and will include exceptional anomalies in Borneo, Java, and southern Papua, Indonesia. Deficits will linger in PNG’s coastal regions and “tail,” and will increase in the nearby islands.

The forecast for the final months – November through January – indicates widespread deficits in Sumatra and Malaysia, and a few pockets in northern Southeast Asia. Surpluses are forecast in central Vietnam, the Philippines, coastal Indonesian Borneo, Java, the Lesser Sunda Islands, Sulawesi, the Maluku, and New Guinea. Deficits will shrink in the Bismarck Archipelago and Solomons.

Please note that WSIM forecast skill declines with longer lead times.

East Asia

The 12-month forecast for East Asia through January 2023 indicates widespread water surpluses of varying intensity in Northeast China. Anomalies will be particularly intense from eastern Inner Mongolia into Heilongjiang, Jilin, and Liaoning.

Surpluses are also forecast in much of the Yellow River (Huang He) Watershed and North China Plain. Anomalies will be severe to exceptional spanning the Hebei-Shandong border and from southeastern Shanxi leading west, and moderate to severe in the Plain's southern half in the Lower Yangtze River region. Moderate surpluses are expected in southeastern Guizhou, pockets of Yunnan, and a pocket in northeastern Taiwan.

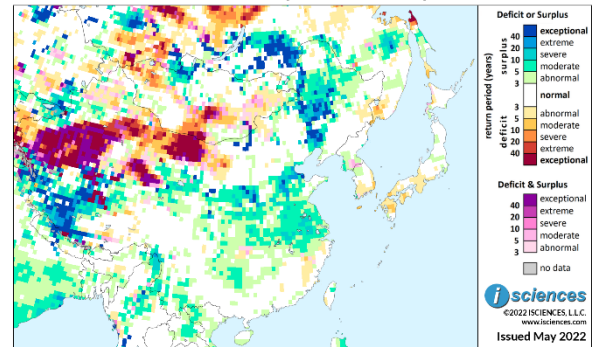
Widespread, intense deficits will reach from western Inner Mongolia through northern Qinghai and a vast belt across Xinjiang Uygur though transitional conditions (pink/purple) are also forecast. In Tibet (Xizang), intense surpluses will dominate many areas in the western half of the region and will include exceptional anomalies along the Yarlung (Brahmaputra) River.

North Korea can expect some moderate surpluses in the Yellow Sea province of South Hwanghae. Moderate deficits will skirt the peninsula's southeastern coast and reach across the Korea Strait to Japan in pockets of Kyushu, Shikoku, and Honshu's southern tip.

In Mongolia, deficits will be exceptional in the western Gobi Desert and severe in the lakes region in the nation's northwest. Surpluses are forecast in Khovsgol region in the north.

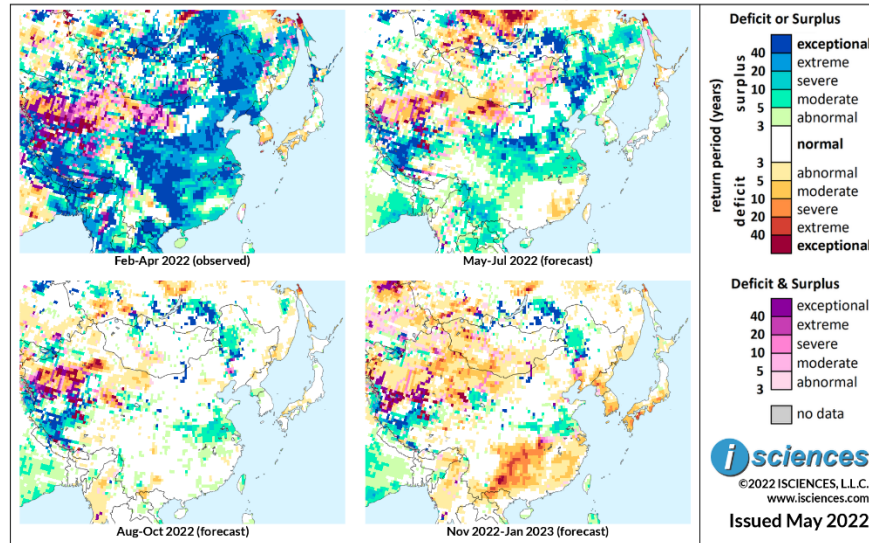
The 3-month time series maps below show the evolving conditions in more detail.

**ISciences Water Anomalies Forecast
East Asia: February 2022 - January 2023**



Based on observed data through April 2022 and forecasts through January 2023

ISciences Water Anomalies Forecast
East Asia: February 2022 - January 2023



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates persistent, widespread surpluses from Northeast China through the North China Plain and much of the Yellow River Watershed. Surpluses will be extreme to exceptional from western Heilongjiang into western Liaoning; the North China Plain’s northern half; and in the Loess Plateau region at the base of the Ordos Loop. In the Yangtze Watershed, surpluses are forecast throughout the northern portion of the basin and in the upper reaches of the south. While much of South and Southeast China can expect normal water conditions, moderate deficits will emerge in the Southeast, particularly in eastern Guangdong, and surpluses are forecast throughout Yunnan and in southern Hainan. Deficits of varying intensity are predicted from western Inner Mongolia through the Tarim Basin across Xinjiang Uygur. Intense surpluses will persist in western Tibet.

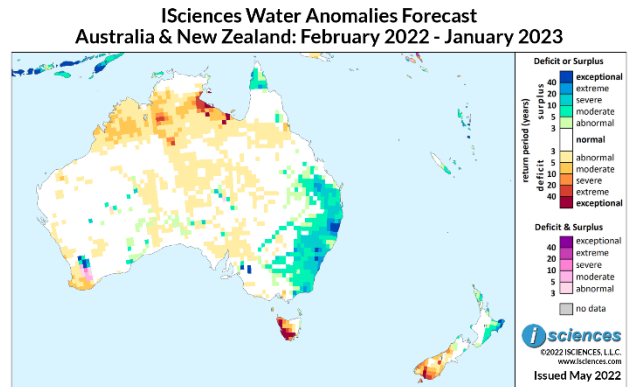
In Mongolia, moderate deficits are forecast in the western Gobi Desert and pockets in the lakes region in the nation’s northwest. Surpluses will be intense in Khovsgol region and the Hentiyn Mountains, and moderate in pockets in the Hangayn and central Altai Mountains. On the Korean Peninsula, moderate surpluses are forecast on Korea Bay and in the peninsula’s southern tip, and moderate deficits along the central border. In Japan, deficits are expected in Hokkaido’s coastal west.

From August to October, anomalies will shrink considerably though surpluses will persist in Northeast China; from Jiangsu reaching inland to Shaanxi; pockets of northeastern Qinghai; and western Tibet. Deficits will retreat from Southeast China, emerge in a few scattered pockets of the south, and shrink from Inner Mongolia through Xinjiang. Moderate surpluses will emerge in northern Taiwan and persist in South Hwanghae, North Korea.

The forecast for the final three months – November through January – indicates widespread deficits in China from Yunnan and Sichuan to the southeast coast, Korea, southern Japan, and Xinjiang into Mongolia. Surpluses will persist in Northeast China, much of the North China Plain, northeastern Qinghai, and western Tibet. Please note that WSIM forecast skill declines with longer lead times.

Australia & New Zealand

The 12-month forecast through January 2023 indicates widespread water surpluses in eastern Australia from Rockhampton, Queensland through eastern Victoria. Anomalies will be widespread in New South Wales reaching extreme to exceptional intensity in the North Coast region and around Sydney, and will be extreme in East Gippsland, Victoria. Surpluses will extend inland to the Macquarie and Lachlan Rivers, and moderate surpluses will trace the path of the Darling River. Surpluses are also expected in Far North Queensland north of the Holroyd River in Cape York Peninsula.



Based on observed data through April 2022 and forecasts through January 2023

Deficits are expected across northern Australia from the Kimberley in Western Australia where anomalies will be moderate through the southern coast of the Gulf of Carpentaria where deficits will be more intense. Moderate to severe deficits are also forecast in the Victoria River catchment in Northern Territory.

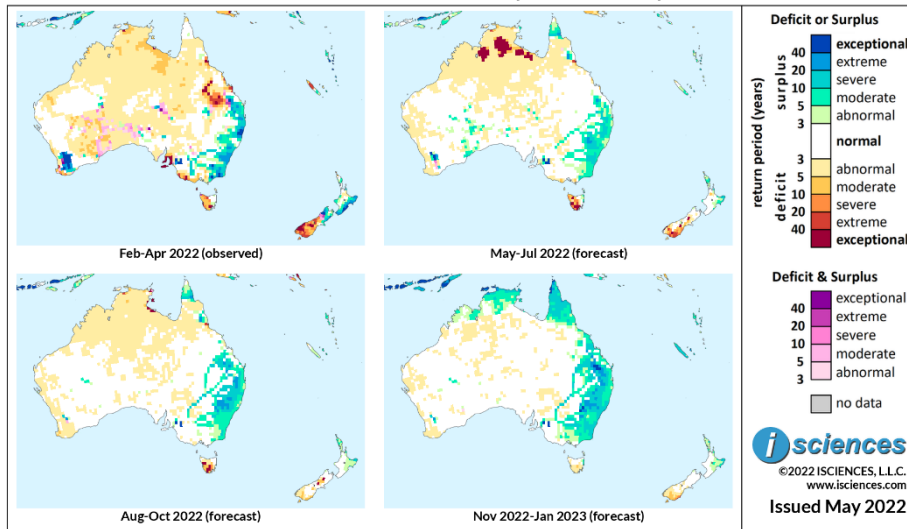
In the nation's southwest corner, moderate to exceptional surpluses are forecast in the Avon River catchment, with transitional conditions to the south leading to moderate deficits in Albany and along the coast to Busselton.

Severe to exceptional deficits will dominate western Tasmania, the Derwent Estuary, and Hobart.

In New Zealand, deficits of varying intensity are predicted for South Island's southern half. Anomalies will be exceptional in parts of Southland. Moderate surpluses are expected in Hawke's Bay Region on North Island, becoming intense in East Cape. Moderate surpluses are also forecast in Northland, New Zealand and in southern New Caledonia.

The 3-month maps (below) show the evolving conditions in greater detail.

**iSciences Water Anomalies Forecast
Australia & New Zealand: February 2022 - January 2023**



Based on observed data through April 2022 and forecasts through January 2023

The forecast through July indicates that while downgrading, surpluses will remain widespread in eastern Australia from just south of Rockhampton, Queensland (QLD), through Brisbane and the Murray-Darling Basin into East Gippsland, Victoria. Anomalies will be moderate to severe overall but are expected to be extreme in a pocket north of Dubbo, New South Wales. Moderate surpluses will trace the Darling and Lachlan Rivers, but more intense surpluses are forecast in the lower Murray region. Surpluses will emerge in Far North QLD north of the Holroyd River in Cape York Peninsula and will intensify in a small pocket west of Cairns. Exceptional deficits will emerge in Northern Territory (NT) in the Victoria River region, around the town of Katherine, and near the southern coast of the Gulf of Carpentaria. In Western Australia (WA), surpluses will shrink in the greater Avon River region and pockets of moderate surplus will re-emerge in the Great Victorian Desert and western Nullarbor Plain. In Tasmania, intense deficits are expected in the west, Derwent Estuary, and Hobart.

Anomalies in New Zealand will shrink but intense deficits are forecast in South Island's southern half, and surpluses will persist in Northland and Gisborne Region in North Island. Moderate surpluses are expected in southern New Caledonia.

From August through October, widespread surpluses will persist in eastern Australia, emerging in the Mackenzie River catchment west of Rockhampton and becoming severe on the Darling River. Extreme surpluses will emerge west of Brisbane and increase north of Dubbo. Surpluses will persist in the northern area of the York Peninsula and a pocket west of Cairns. Intense deficits in northern Australia will shrink considerably, lingering on the Gulf Coast. Near-normal water conditions are forecast for WA. Deficits will remain intense in Tasmania but will shrink somewhat. Anomalies in New Zealand will shrink considerably, leaving small pockets, and surpluses in New Caledonia will become merely mild.

The forecast for the final months – November through January – indicates that widespread surpluses will increase in eastern Australia and the Cape York Peninsula, and surpluses will emerge in Top End, NT and the Ord River region in WA.

Please note that WSIM forecast skill declines with longer lead times.