

# Global Water Monitor & Forecast Watch List

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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 June 2022 and an ensemble of forecasts issued the last week of June 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.

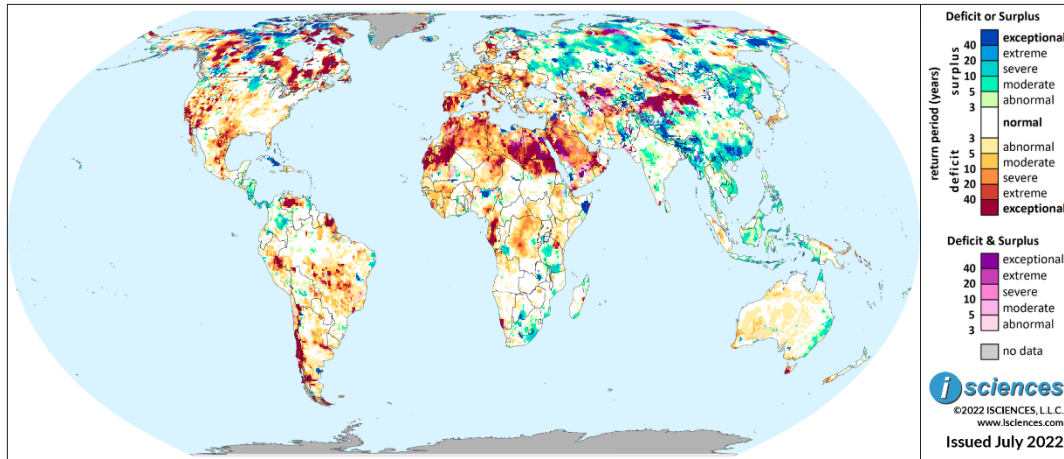
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## Worldwide Water Watch List

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

ISciences Water Anomalies Forecast: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 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 September indicates that, while many regions will see water deficits, intense anomalies will be limited. Areas of deficit include California, the Rockies, Upper Mississippi Basin, and East Coast. Widespread surpluses are forecast in North Dakota.

**Canada:** The forecast through September indicates water deficits in Newfoundland, New Brunswick, Nova Scotia, large areas of Quebec and Ontario, and northern Manitoba, Alberta, and British Columbia. Surpluses are forecast in southeastern British Columbia and northwestern Saskatchewan.

**Mexico, Central America, and the Caribbean:** The forecast through September indicates that water deficits in northern Mexico will shrink and surpluses will emerge in the Yaqui River Basin. Deficits are expected in San Luis Potosí, Puebla, and Haiti. Surpluses are expected in Central America.

**South America:** The forecast through September indicates widespread water deficits in central and southeastern Brazil, central Peru, and Chile, as well as deficits in many other regions. Surpluses are expected in Colombia and in Brazil’s eastern tip.

**Europe:** The forecast through September indicates widespread water deficits, and though exceptional deficits will shrink - persisting in Estonia, central Sweden, Slovakia, central Ukraine, the Rhône River, and the Valdecañas Reservoir in Spain - anomalies will be severe to extreme in many regions.

**Africa:** The forecast through September indicates water deficits of varying intensity across North Africa, and in western Gabon, Kenya, and central Botswana. Areas of surplus include Tanzania, Mozambique, northern Zambia, and South Africa.

**Middle East:** The forecast through September indicates water deficits in many regions, especially intense and widespread in Saudi Arabia, southern Iraq, and Isfahan Province in Iran. Surpluses are expected on Turkey's central Black Sea Coast leading into the Kizilirmak River Watershed.

**Central Asia and Russia:** The forecast through September indicates that water deficits will moderate in Mangystau, Kazakhstan and increase in Turkmenistan. Deficits in Russia include the Gulf of Ob past Norilsk, the Vilyuy Reservoir, and the Lena Delta. Surpluses are forecast in the Middle Ob River region.

**South Asia:** The forecast through September indicates water surpluses in western Madhya Pradesh and pockets of southern India; Sri Lanka; northeastern Bangladesh; and from west-central Pakistan into Afghanistan. Deficits are forecast in pockets of Afghanistan's north, west, and south.

**Southeast Asia and the Pacific:** The forecast through September indicates that water surpluses will shrink and downgrade but remain widespread. Deficits are forecast in western Cambodia, central Sumatra, New Guinea's north and southeastern coasts, New Britain and the Solomons.

**East Asia:** The forecast through September indicates that areas of water surplus include Southeast China, Northeast China, the Shandong Peninsula, and North Korea. Deficits are forecast in northeastern Sichuan and southern Honshu, Japan.

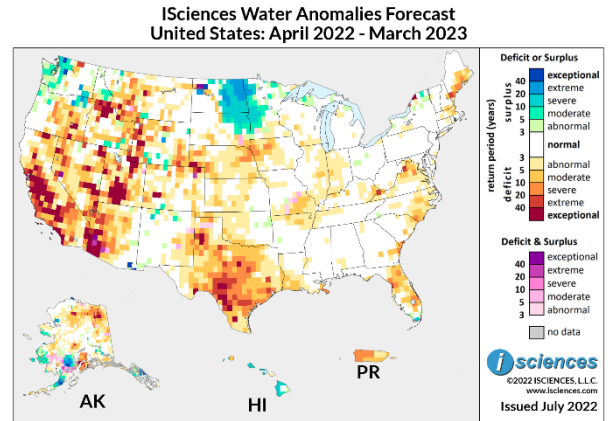
**Australia & New Zealand:** The forecast through September indicates that widespread water surpluses in eastern Australia will increase. Deficits will persist in Tasmania, emerge in Arnhem Land and the Kimberley in northern Australia, and shrink in New Zealand.

## Watch List: Regional Details

### United States

The 12-month forecast ending March 2023 indicates widespread water deficits of varying intensity in the U.S. West, Rockies, Southwest, and Texas. Deficits are also expected in Florida and several regions on the East Coast. The Central Plains will see deficits, but surpluses are forecast in the Northern Plains as well as parts of the Pacific Northwest.

In the West, exceptional anomalies will be widespread in California’s San Joaquin Valley with deficits of varying intensity in most other regions of the state. Other areas with a forecast of exceptional deficit include southwestern Arizona, the Utah Rockies, and the Salmon River Mountains in Idaho. Though deficits are forecast in many regions of Idaho, Montana, and Wyoming, some isolated pockets of surplus are also forecast.



In the Pacific Northwest, surpluses are expected from western Washington into Oregon and spanning their shared border region in the east.

In the center of the nation, moderate to severe deficits are forecast in Nebraska and Iowa, and moderate deficits in southwestern Missouri and pockets of Kansas. The Northern Plains, however, can expect widespread severe to extreme surpluses from eastern North Dakota into Minnesota and South Dakota. Deficits will follow much of the Missouri River.

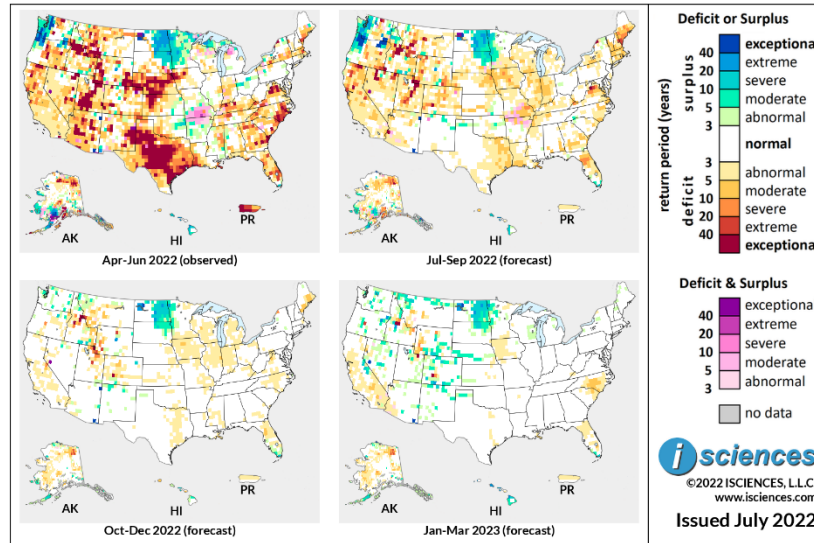
The forecast for Texas indicates widespread deficits, extreme to exceptional from the Hill Country into the South Texas Plains. Deficits will also be especially intense southwest of Amarillo in the Panhandle. In Louisiana, moderate deficits are forecast in the southwest and severe deficits at the mouth of the Mississippi.

On the East Coast, moderate to extreme deficits are forecast in eastern Maine, and a few pockets of moderate deficit in Massachusetts. Deficits of varying intensity are forecast in Virginia, North Carolina, pockets of South Carolina and Georgia, and many regions of Peninsular Florida. Surpluses are expected in the Everglades.

Outside the contiguous U.S., Alaska can expect deficits in the northeast and central north, and near Anchorage in the south. Surpluses are expected near Juneau, Nome, west of Bethel, the central region of the Alaska Peninsula, north of Iliamna Lake, and at the eastern end of the Alaska Range. Surpluses are forecast in Hawaii and severe deficits in western Puerto Rico.

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

**ISciences Water Anomalies Forecast  
United States: April 2022 - March 2023**



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates that, while many regions of the country will see deficits, exceptional anomalies will be limited primarily to pockets in the Rockies and northern California. Mild to moderate deficits are forecast in southern California and deficits of varying intensity in the north. Mixed conditions are expected in the Pacific Northwest: surpluses in the far northwest, Blue Mountains, and northern Idaho, and pockets of deficit elsewhere. Pockets of deficits are expected in the Rockies and Nevada along with some isolated surpluses. Severe to extreme surpluses will remain widespread in the eastern region of the Dakotas and into Minnesota, and surpluses are forecast in a pocket on the Missouri River west of Lake Sakakawea. Deficits, generally moderate are forecast from Nebraska through the Upper Mississippi River Basin, on the Arkansas River, and in East Texas and southern Louisiana. Moderate surpluses will emerge on the Canadian River. On the East Coast, deficits are expected in many regions, moderate overall but more intense in Maine, northern Virginia, and central Florida, and surpluses in the Everglades.

From October through December, normal water conditions will return to much of the nation. However, widespread severe surpluses will persist in North Dakota, moderating to the east and south, and surpluses will increase near Lake Sakakawea. Severe to exceptional deficits will persist in the Salmon River region of Idaho and the Bear River region in the southwest leading into Utah. Pockets of moderate deficit will linger in southwestern Montana and small, isolated pockets of moderate surplus in the Pacific Northwest, Rockies, and Southwest. Moderate deficits will persist in eastern Maine and west-central Florida, and surpluses in the Everglades.

The forecast for the final months – January through March 2023 – indicates surpluses in the Northern Plains, pockets in the Northwest and Nevada, the southern Sierra Nevadas, and on rivers in the Rockies and Plains. Some deficits will linger in the northern Rockies and emerge in North Carolina.

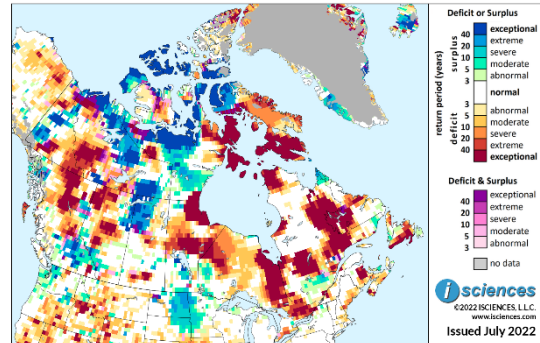
Please note that WSIM forecast skill declines with longer lead times.

## Canada

The 12-month outlook for Canada through March 2023 indicates vast areas of exceptional water deficit in the eastern half of the nation and in the northwest.

In the east, 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, and the Manicouagan Reservoir and Lake Mistassini regions in Quebec. Surpluses are forecast in Quebec between the Saint Maurice River and Lac Saint Jean.

ISciences Water Anomalies Forecast  
Canada: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 2023

Exceptional deficits are expected in a broad column along Ontario's eastern border and in Southern Ontario east of Georgian Bay. Deficits along Lake Erie's north coast are expected to be severe to extreme. Deficits will be widespread in Northern Ontario and will include exceptional anomalies in northern Kenora District though surpluses are forecast for southern Kenora.

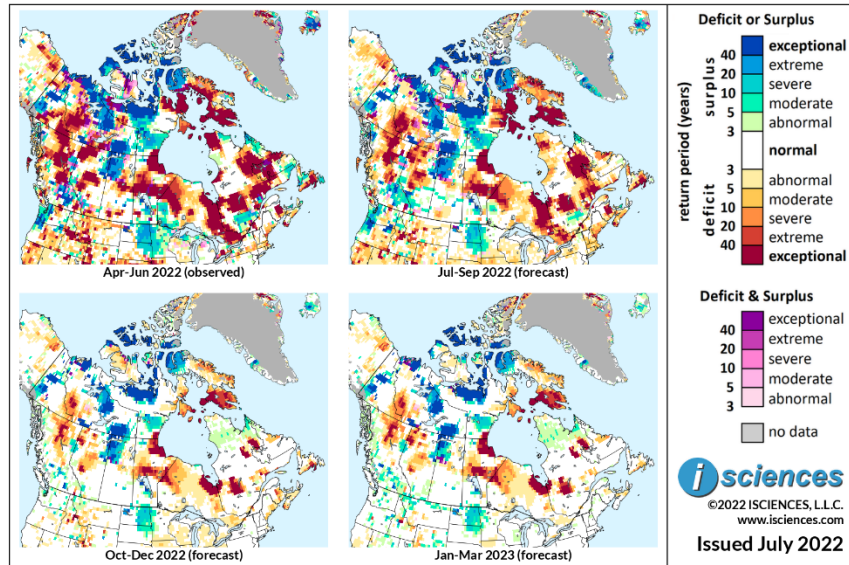
Widespread intense deficits are forecast in a belt across central Manitoba and in the province's northeast reaching Hudson Bay. Surpluses are forecast south of Lake Winnipeg and near the U.S. border. Elsewhere in the Prairie Provinces, deficits are forecast in a path across south-central Saskatchewan leading to Regina and a pocket in the center of the province, but widespread surpluses are forecast in the northwest leading west past Fort McMurray, Alberta. In Alberta, deficits are expected in the central south, the Middle Athabasca River region, and the northwest, and surpluses near Calgary and in the Rockies near Banff.

Surpluses are forecast in the Thompson River Watershed of southern British Columbia leading east into the Columbia Watershed, but exceptional deficits are expected in East Kootenay in the province's southeast corner. Exceptional deficits are also forecast in the Upper Fraser Watershed and severe deficits in the Nechako River Watershed. In British Columbia's central far north, exceptional deficits will lead 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: April 2022 - March 2023**



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates many areas of deficit in the east, frequently intense, including Newfoundland, eastern New Brunswick, Nova Scotia, from the Caniapiscou Reservoir in Quebec (QC) to the Smallwood Reservoir in Labrador, and the Ungava Peninsula, Côte-Nord, and Lake Mistassini regions in Quebec. Surpluses will persist in the Middle Saint Maurice River. In Ontario (ON), deficits will be intense along the eastern border and east of Georgian Bay and severe north of Lake Erie. Much of Northern Ontario will also see deficits though surpluses will persist around Trout Lake in Kenora. Surpluses are forecast in Manitoba (MB) south of Lake Winnipeg and along the U.S. border, but intense deficits will persist in a belt across the province and in the northeast.

Widespread, intense surpluses will persist from northwestern Saskatchewan (SK) into Alberta (AB). Deficits will linger in pockets of the south and in the province’s center, and moderate surpluses will trace the north and south branches of the Saskatchewan River into AB, becoming intense in the Alberta Rockies. Deficits will be widespread and intense from the Middle Reaches of the Athabasca River through northwestern AB. In British Columbia (BC), surpluses are expected in the Thompson and Quesnel Watersheds, and intense deficits in the Upper Fraser and Nechako Watersheds and from Williston Lake into Yukon.

From October through December, anomalies will shrink and downgrade. However, large pockets of intense deficit will persist in QC, ON, MB, AB, and BC. Surpluses will remain widespread in northwestern SK, will shrink in southeastern BC, and increase around Fort St. John, BC. Near-normal conditions are forecast in southern regions of the Prairie Provinces with some pockets of surplus.

The forecast for the final months – January through March 2023 – indicates a pattern of anomalies like the prior three-months though surpluses will increase somewhat in southern BC. Please note that WSIM forecast skill declines with longer lead times.

## Mexico, Central America, and the Caribbean

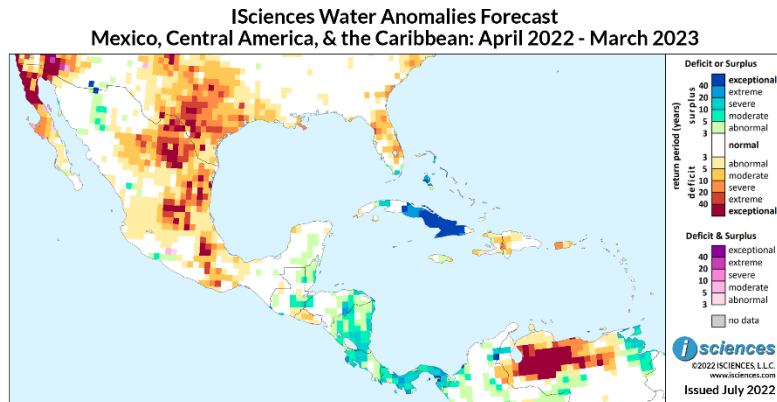
The 12-month forecast ending March 2023 indicates widespread water deficits of varying intensity in the northern half of the Baja Peninsula, in central and northeastern Mexico, and several southern states.

Anomalies will be exceptional in Baja and the Colorado River Delta, and severe to exceptional in Coahuila, Nuevo León, Tamaulipas, San Luis Potosí through Querétaro, and Tlaxcala and Puebla.

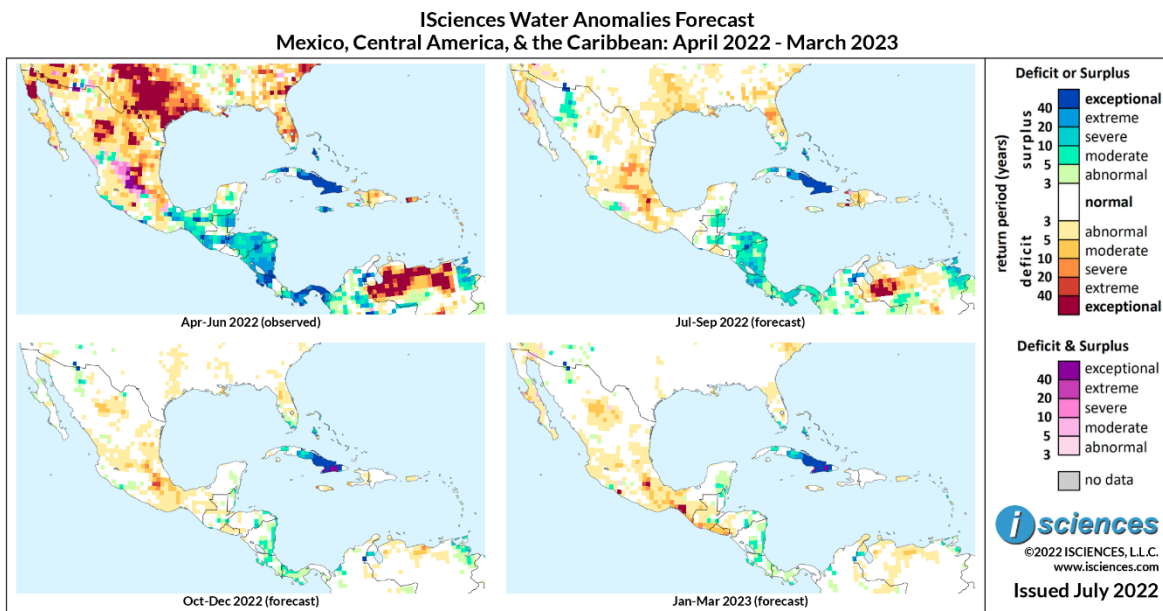
Some pockets of moderate surplus are expected on the shared border of Sonora and Chihuahua.

Surpluses are forecast throughout Panama and much of Nicaragua, in northern Costa Rica and eastern Honduras, and in the Motagua River Watershed of Guatemala near Honduras. Moderate deficits are expected in El Salvador and Hispaniola, and surpluses in Cuba and the northern Bahamas.

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



Based on observed data through June 2022 and forecasts through March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates that deficits in Mexico will shrink and downgrade in the north where moderate deficits are forecast in northern Baja and southeastern Chihuahua, and surpluses will emerge in the Yaqui River Basin. Moderate to severe deficits are expected from southern Tamaulipas

and San Luis Potosí into neighboring land-locked states and through Puebla into Oaxaca. A few pockets of surplus are forecast in Mexico's west in southern Durango and the Lower Balsas River region on the border of Michoacán and Guerrero.

Surpluses of varying intensity are expected from Belize into Guatemala; in the Motagua River Watershed of Guatemala near Honduras; and in eastern Honduras, Nicaragua, Costa Rica, and Panama. Surpluses are also forecast for Cuba and the Bahamas, but deficits are forecast from Haiti into the Dominican Republic.

From October through December, anomalies in Mexico will shrink. Moderate deficits will linger in southern Chihuahua. Deficits ranging from moderate to severe are forecast in Guanajuato, Queretaro, Hidalgo, and Tlaxcala but anomalies will reach extreme intensity in Puebla. Central Veracruz and eastern Oaxaca can expect some moderate deficits. Surpluses will shrink in Central America with moderate pockets persisting, particularly from southern Nicaragua through western Panama. Deficits will nearly disappear in Hispaniola but will become severe at Jamaica's far east and west points. Surpluses will persist in Cuba and the Bahamas.

The forecast for the final three months – January through March 2023 – indicates that moderate deficits will increase in southeastern Chihuahua and pockets nearby. Intense deficits will persist in Puebla and pockets of moderate deficit are forecast in southern Veracruz, Tabasco, and Oaxaca. Intense deficits will emerge in coastal Chiapas, downgrading as they reach through coastal Guatemala and through El Salvador. Pockets of moderate surplus are expected elsewhere in central America and surpluses are forecast for Cuba and the Bahamas.

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

## South America

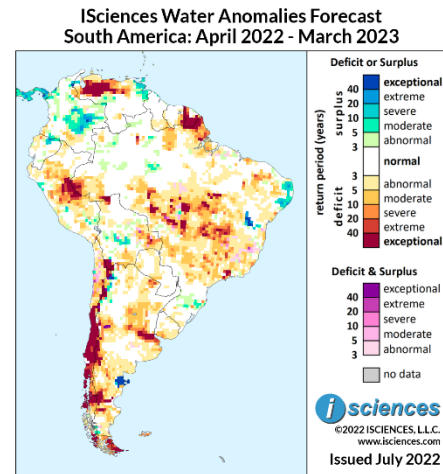
The 12-month forecast through March 2023 indicates widespread water deficits in Brazil’s Central West region through the Southeast with intense pockets in Mato Grosso, Tocantins, and Goiás. In the north, deficits are expected throughout the state of Amapá and exceptional anomalies through much of neighboring French Guiana. Some pockets of deficit are forecast in Brazil’s northeast in Piauí and Ceará, and pockets of surplus in the small states of the far east and in central Bahia.

Across the northern arc of the continent, exceptional deficits are forecast from Merida, Venezuela east to the Guárico River, downgrading as they continue through much of the Orinoco River’s northern watershed. The Orinoco Delta, however, will experience surpluses that will lead south to Guyana. Surpluses are also forecast in much of central Colombia and a pocket northeast of Quito, Ecuador.

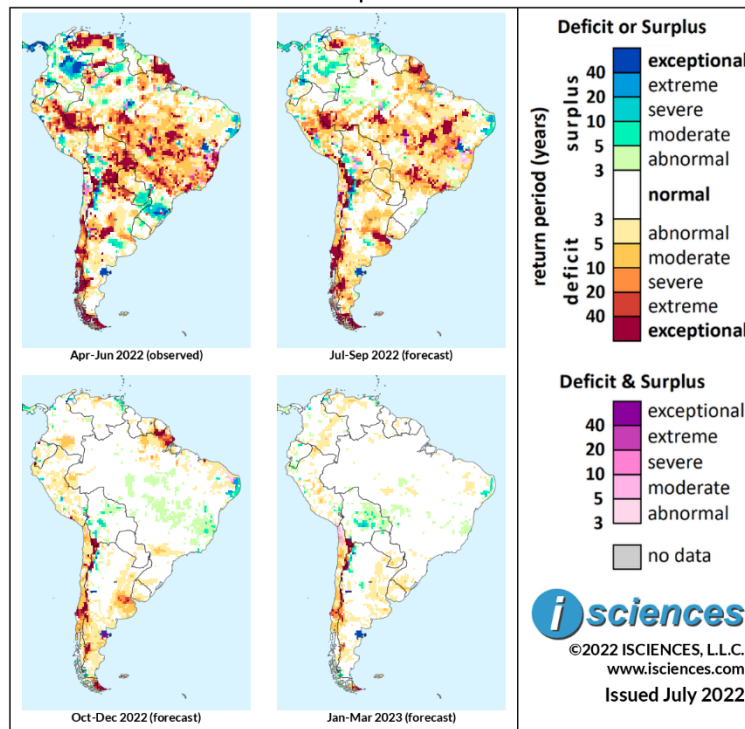
In Peru, deficits will be widespread from the Lower Marañón River in the north through central Peru with exceptional deficits in the middle reaches of the Ucayali River Watershed. From there, deficits will gradually downgrade as they radiate outward and will reach across the border into Brazil. A few pockets of surplus are expected in Peru including near Trujillo on the north coast and east of Huancayo in the central Peruvian Andes. Central Bolivia will see surpluses while deficits are expected in the east and south.

Widespread exceptional deficits are forecast in Chile from La Serena through Valparaiso and Santiago to the Gulf of Corcovado. In Argentina, deficits are forecast in pockets of the Chaco region, slipping across the border into Paraguay, and will be widespread in the eastern Pampas with exceptional anomalies approaching Buenos Aires. Exceptional surpluses are forecast in coastal Chubut Province and exceptional deficits in Patagonia on the Chico River and in Tierra del Fuego.

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



ISciences Water Anomalies Forecast  
South America: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates deficits in many regions of Brazil other than the northwest, far east, and south. Deficits will be widespread and will include intense deficits in Amapá, Tocantins, and Mato Grosso. Surpluses are forecast in Brazil's eastern tip, a pocket in south-central Bahia, and pockets in the northwestern Amazon Basin. Surpluses are expected in Colombia; from the Orinoco Delta into Guyana; and in a pocket near Quito, Ecuador. Deficits will be exceptional in Merida, Venezuela, moderating as they reach Caracas. Intense deficits are also forecast for French Guyana. Widespread severe to exceptional deficits are forecast for central Peru and moderate deficits in pockets of the north and south, though anomalies will be intense near Arequipa. Surpluses are expected near Huancayo.

In Bolivia, surpluses are forecast in the Altiplano and deficits in many other regions, intense in the far south. Deficits will be widespread in Chile, exceptional in central and southern areas. Deficits are predicted for the Pilcomayo and Bermejo Rivers in northern Argentina, and in the eastern Pampas where anomalies will be exceptional approaching Buenos Aires. Surpluses are forecast in the nation's northwest, a pocket in the central Pampas, and in coastal Chubut. Patagonia will see deficits of varying intensity, exceptional in Tierra del Fuego.

From October through December, anomalies will shrink considerably, leaving near-normal conditions in many regions. However, deficits are forecast from northern Pará and Amapá (Brazil) into French Guiana, near Caracas, in south-central Colombia, on the Jururá River in western Acre (Brazil), in Bolivia's southern tip, and in Chile, the eastern Pampas, and Patagonia. Areas of surplus include the Orinoco Delta, Brazil's easternmost tip, and pockets in Bolivia.

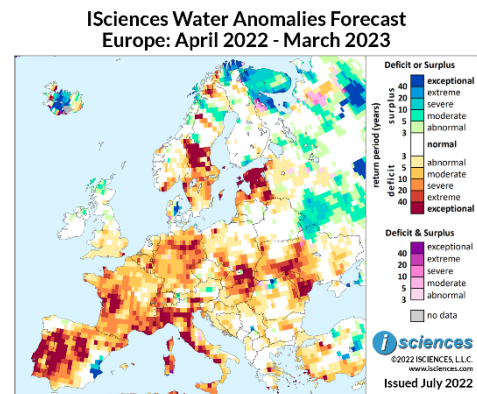
In the final quarter – January through March 2023 – deficits are expected in Chile, Bolivia’s southern tip, Tierra del Fuego, and pockets in central Peru and near Caracas. Areas of surplus include central and eastern Bolivia, Brazil’s eastern tip, and coastal Chubut.

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

## Europe

The 12-month forecast through March 2023 indicates water deficits of varying intensity in many regions of Europe. Anomalies will be widespread from Portugal through Germany, in Italy, from Slovakia and Hungary through Ukraine’s western half, and in Estonia, Latvia, and southern Sweden.

On the Iberian Peninsula, deficits will be exceptional in western Portugal including Lisbon, and in western and central Spain. Exceptional surpluses, however, are expected in the Valencia region on Spain’s Mediterranean Coast. In France, exceptional deficits are forecast in the watershed of the Vienne River, a tributary of the Loire, and in Marseille.



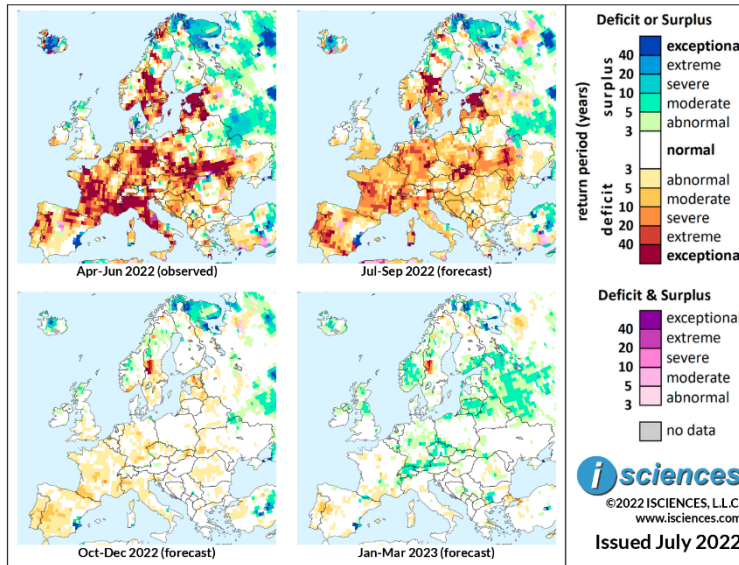
Based on observed data through June 2022 and forecasts through March 2023

Northern Italy’s Piedmont, Liguria, and Po River Basin are expected to experience exceptional deficits, as will the Tyrrhenian Coast through Vatican City and Rome. Deficits will also be intense in eastern Slovakia, pockets of southern Ukraine and Moldova, Estonia, and central Sweden’s Dalälven River Watershed. Generally moderate deficits are forecast in pockets of the Balkans.

Some moderate surpluses are forecast in the Scottish Highlands, but surplus anomalies will be more intense in eastern Denmark, a pocket on the north-central border of Romania, and Ukraine’s northern tip. In Northern Europe and European Russia, areas with a forecast of surplus include central Iceland; Arctic Norway; southern Norbotten, Sweden; Helsinki, Finland; and Murmansk, the Vychegda Lowland, and Svernavya Dvina, Desna, and Volga River Watersheds in Russia.

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

ISciences Water Anomalies Forecast  
Europe: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates widespread water deficits of varying intensity. Though the extent of exceptional deficit will shrink, exceptional anomalies will persist in Estonia, central Sweden’s Dalälven River Watershed, Slovakia, central Ukraine, the Rhône River, and near the Valdecañas Reservoir on the Tagus River in Extremadura, Spain. Severe to extreme deficits are expected in many regions, including northern Portugal, the Lower Loire and Vienne River regions of France, northern Italy, the Rhine River and central Germany, and Latvia. Moderate deficits will increase in the Balkans, England, Belarus, and southern Norway. Intense surpluses will persist in Spain’s Valencia region, eastern Denmark, western Iceland, and Arctic Norway. In Russia, deficits will increase west of Moscow and in the Mezen/Pinega River region in the north. Exceptional surpluses will persist in the Vychegda Lowland and Middle and Lower Volga River regions, and moderate surpluses in the Central Russian Upland and from Rybinsk Reservoir to Lake Onega.

From October through December, deficits will shrink and downgrade considerably, leaving some generally moderate pockets in Portugal, Spain, France, Italy, Germany, Slovakia, Ukraine, and Latvia, and deficits of greater intensity in Estonia, Sweden, and on Norway’s southern coast. Surpluses are forecast in Valencia, northernmost Ukraine, the Scottish Highlands, Iceland, western and Arctic Norway, Murmansk, the Vychegda Lowland and much of the Volga River Watershed.

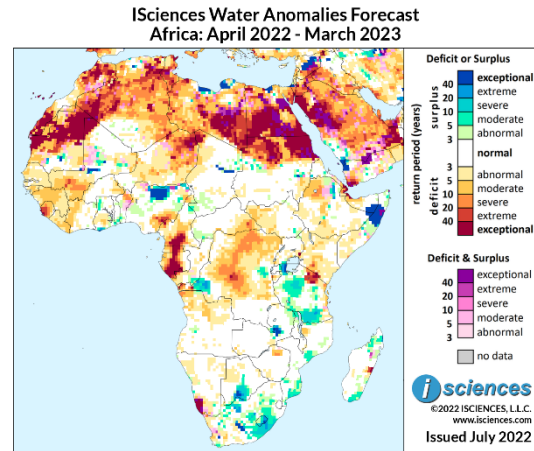
The forecast for January through March 2023 indicates that deficits will nearly disappear, lingering in central Sweden, the Lower Pinega River Watershed in Russia, and from northeastern Portugal into Spain. Moderate surpluses will become widespread from western Russia into southern Finland and parts of the Baltics, and in southern Norway. Surpluses will emerge in Central Europe and the northern U.K.

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



## Africa

The 12-month forecast through March 2023 indicates widespread water deficits, including many areas of intense deficit, across North Africa. Anomalies will be exceptional in Egypt, northern Sudan, northeastern Niger, northern Mauritania, and Morocco's southern provinces and parts of the north. Intense surpluses are expected in pockets of coastal Libya including Benghazi. In West Africa, severe to extreme deficits are forecast for Sierra Leone and southern Mali, and moderate deficits in Guinea, Liberia, and western Côte d'Ivoire. Surpluses will be intense in the Inner Niger Delta of central Mali.



Based on observed data through June 2022 and forecasts through March 2023

In nations around the Gulf of Guinea, intense surpluses are forecast surrounding Kano State in northern Nigeria and surpluses of lesser intensity in coastal Ghana and the Black Volta River Basin in the northwest. Severe deficits are forecast in northern Benin and moderate to exceptional deficits in southeastern Nigeria and from central Cameroon through Gabon.

In the Horn of Africa, intense deficits are expected from Djibouti into Somaliland and intense surpluses in the Nugaal Valley. In Ethiopia, surpluses are forecast in the Afar region, severe deficits in Amhara, and moderate deficits in Addis Ababa.

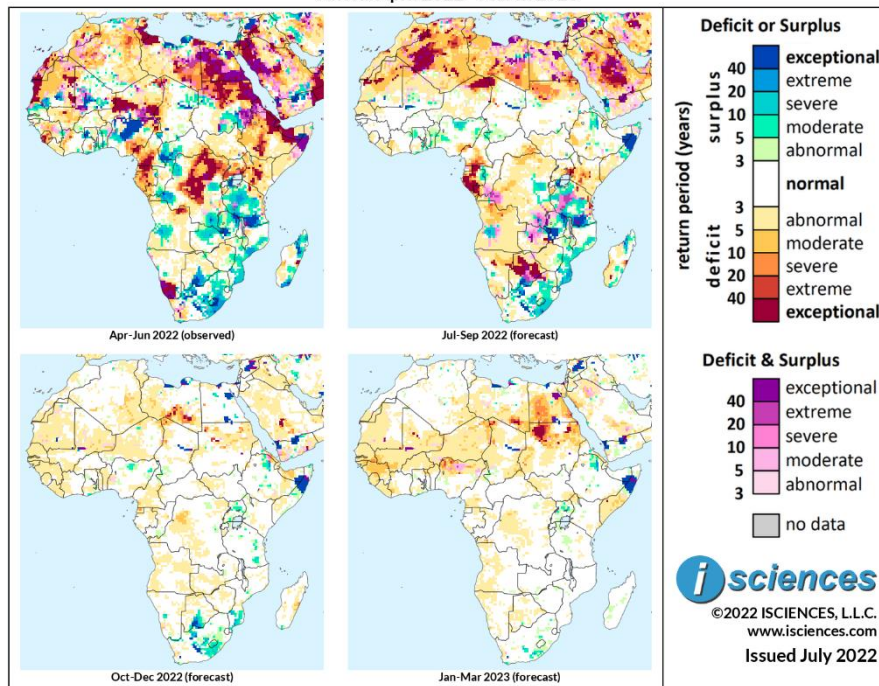
In the heart of the continent, deficits are forecast in much of the Congo Basin, moderate to severe overall in Democratic Republic of the Congo (DRC), but more intense in a pocket of the Kasai Subbasin. Intense surpluses are forecast near Kinshasa and Brazzaville, and deficits at the river's mouth and nearby in Angola. Moderate surpluses are forecast in a pocket of DRC west of Rwanda. Surpluses are expected in eastern Rwanda and moderate deficits in Burundi.

Deficits will be intense in Tanzania near the north-central border, moderating as they reach into Kenya. Surpluses will be intense in Tanzania west of Lake Victoria, and widespread moderate to severe anomalies are forecast in the northwest and south. Surpluses will also be intense in central Zambia.

Widespread surpluses are expected in South Africa from Eastern Cape's northern half through southern KwaZulu-Natal, Lesotho, and Free State, with some pockets farther north. Surpluses are also forecast in the Upper Karoo and Kalahari regions of Northern Cape and in south-central Botswana. Deficits will be intense on Namibia's southern coast and moderate to severe in a pocket north of Harare, Zimbabwe. Pockets of moderate surplus are predicted in Mozambique near the central coastal city of Quelimane and in the south, and in northern and southeastern Madagascar. Deficits will be intense in a pocket on eastern Madagascar's central coast.

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

ISciences Water Anomalies Forecast  
Africa: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates deficits of varying intensity across North Africa, exceptional in western Algeria and northern Niger. Transitional conditions (pink/purple) are also forecast, particularly in Egypt and Libya. In the Horn, surpluses are forecast in Afar, Ethiopia, and northern Somalia, exceptional in the Nugaal Valley. Pockets of moderate deficit are expected in western Ethiopia and in Somalia's southern tip, but deficits will be more intense from central Kenya into Uganda, and along Tanzania's north coast.

On the opposite side of the continent around the Gulf of Guinea, some moderate deficits are expected west of the Sassandra River in Côte d'Ivoire, and moderate surpluses in pockets from Ghana through Nigeria, though anomalies will be severe in Kano State. Deficits are forecast in southeastern Nigeria and intense deficits from central Cameroon through western Gabon. Surpluses are predicted in Gabon's northeast.

Deficits are forecast in north-central Angola, but surpluses are expected near Huambo. Deficits are forecast from DCR into southeastern Central African Republic and in the Congo's Ruki Subbasin, but moderate surpluses are forecast on the Lualaba River - becoming severe as they reach east to Rwanda – and along the Lukuga River. Surpluses and transitional conditions are expected in Tanzania and Zimbabwe, and widespread surpluses in many parts of Mozambique. Likewise, surpluses will be widespread in South Africa in Eastern Cape, KwaZulu-Natal, Free State, Gauteng, Mupumalanga, and the Upper Karoo and Kalahari regions of Northern Cape, reaching into Botswana. Exceptional deficits are forecast elsewhere in Botswana, generally moderating as they reach west into Namibia past

Grootfontein. In Madagascar, surpluses are forecast in the northwest and southeast, deficits in pockets on the central coasts.

From October through December, anomalies will shrink considerably. Deficits are forecast in southern Libya, pockets of northern Sudan, Somaliland, and Équateur Province in DRC. Surpluses will persist in Kano State, Nugaal, pockets of Ethiopia and Tanzania, southern Mozambique, and many regions in South Africa. Surpluses are expected to emerge in Uganda and along the Orange River on Namibia's southern border, re-emerge in coastal Libya and pockets of Egypt, and increase in southern Botswana.

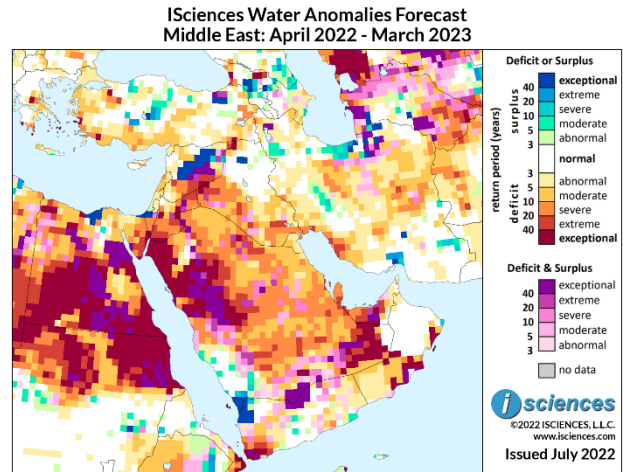
In the final quarter – January through March 2023 – deficits are forecast in Egypt, northern Sudan, southeastern Libya, the northern shared border of Mali and Chad, northwestern Nigeria, and Guinea. Surpluses are expected in coastal Libya, Uganda, northern Ethiopia, Nugaal, and Eastern Cape.

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

## Middle East

The forecast for the 12-month period ending March 2023 indicates widespread, intense water deficits in Saudi Arabia and parts of the Levant, and deficits of lesser intensity in Iran and pockets of Turkey.

On the Arabian Peninsula, severe to exceptional deficits are forecast throughout much of Saudi Arabia with severe anomalies in Riyadh Province and exceptional anomalies in the metropolis of Medina. Exceptional surpluses are forecast northeast of Sanaa, Yemen, and pockets of intense deficit near the Bab el-Mandeb Strait and in central Oman. Deficits will be severe in Qatar and more intense in United Arab Emirates.



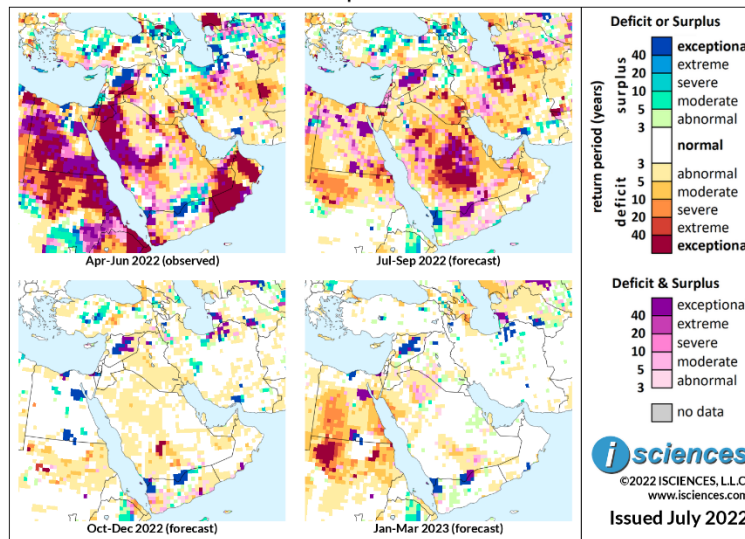
In Iraq, deficits ranging from moderate to extreme are forecast west of the Euphrates and in the Lower Tigris River region. Iran can expect moderate to severe deficits in many of its central provinces and extreme deficits in Bushehr Province on the Persian Gulf. A few pockets of surplus are forecast including on the central Caspian Sea Coast, south of Lake Urmia, and near the Strait of Hormuz.

Mixed conditions are forecast in the Levant with surpluses in central Syria and deficits elsewhere. In Turkey, deficits of varying intensity are forecast in pockets of the west, along the Mediterranean coast, the Ceyhan River Watershed, and Upper Murat River region. Surpluses are forecast from Lake Tuz into the Kizilirmak River Watershed.

Mixed conditions are forecast in Georgia and Azerbaijan.

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

ISciences Water Anomalies Forecast  
Middle East: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates deficits in many regions, though especially intense and widespread in Saudi Arabia where anomalies will be exceptional in the center of the nation, accompanied by transitional conditions (pink/purple). Deficits, generally moderate, are forecast in Qatar and UAE. Surpluses are forecast in Yemen’s northwestern corner and severe deficits in northwestern Oman. Deficits of varying intensity are forecast in Iraq, generally west of the Tigris River. Anomalies will be intense in Baghdad and the lower Gharraf Canal. Some pockets of moderate surplus are forecast in the northeast leading into Iran, but deficits will be widespread in much of Iran. Anomalies will be exceptional in Isfahan Province’s northeast. Surpluses are forecast near the Strait of Hormuz and in central Sistan and Baluchistan Province. In Turkey, surpluses are expected on the central Black Sea Coast leading well inland into the Kizilirmak River Watershed to Lake Tuz, and also in pockets of nation’s northeast. Moderate to severe deficits are expected in the Upper Ceyhan River region. Mixed conditions are forecast in Georgia and Azerbaijan.

From October through December, deficits will shrink and downgrade overall, but exceptional anomalies will persist in southern Riyadh Province, Saudi Arabia, and moderate to severe deficits in Turkey’s Upper Ceyhan River region. Moderate deficits are forecast in coastal Georgia. Surpluses are forecast from Lake Tuz in Turkey into the Kirzilirmak River Watershed, and north of Konya. Pockets of surplus are also forecast in central Syria; near Tehran, the central Zagros Mountains, and Bandar-e-Abbas in Iran; and Yemen’s northwestern corner and along its central border with Saudi Arabia.

In the final quarter – January through March 2023 – near-normal conditions are forecast overall with deficits in southern Riyadh and along the northern Red Sea in Saudi Arabia and pockets in Georgia and Azerbaijan. Areas of surplus include central Syria, Golestan Province in northeastern Iran, and aforementioned pockets in Yemen.

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

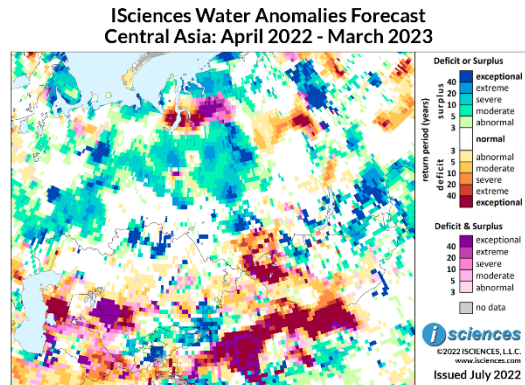
## Central Asia and Russia

The 12-month forecast through March 2023 indicates exceptional water deficits in western Kazakhstan’s Mangystau Region and in the Middle Reaches of the Syr Darya River in the south. Exceptional surpluses are expected in Akmola and Kostanay Regions in far northern Kazakhstan, and extreme to exceptional surpluses in the Alatau Mountains and Kapchagay Reservoir region on the Ile River in the southeast.

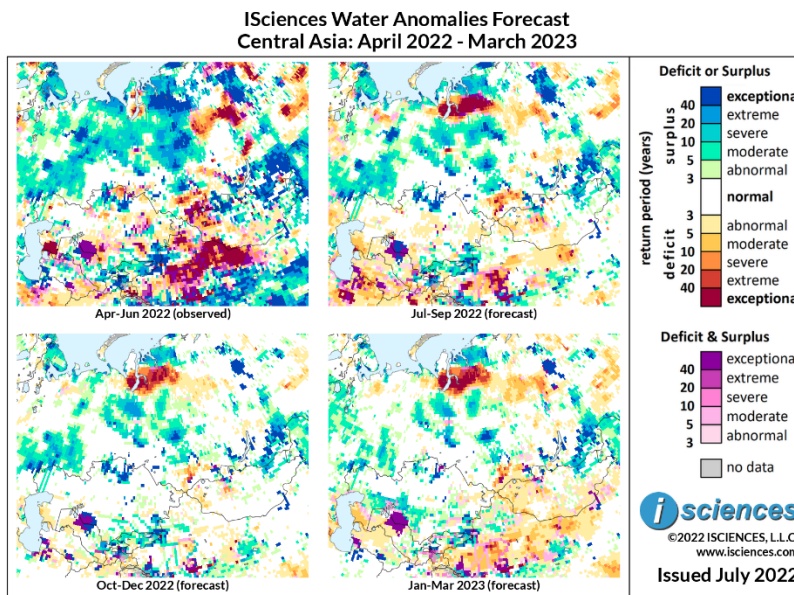
Severe to extreme deficits are expected from eastern Turkmenistan into Uzbekistan, and in eastern Tajikistan. Surpluses are forecast throughout much of Kyrgyzstan, in central Tajikistan, and south of Lake Aydar in southeastern Uzbekistan.

In Asian Russia, intense deficits will span the Gulf of Ob, but widespread surpluses are forecast from the central Ural Mountains through much of the Western Siberian Plain. Deficits will reach exceptional intensity north of the Vilyuy Reservoir in Sakha Republic, though exceptional surpluses are forecast in the Tyung River Watershed of northern Sakha. Siberia’s far south will see deficits as will the area in Irkutsk Oblast north of Lake Baikal. In Transbaikalia’s Zabaykalsky Krai, however, exceptional surpluses are predicted. 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.



Based on observed data through June 2022 and forecasts through March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates that deficits spanning the Gulf of Ob in Russia will increase and exceptional deficits will emerge to the east, transitioning from surplus, to reach past the Yenisei River to the city of Norilsk and the lakes to the south. Surpluses will remain widespread from the Middle Ob River region through the lower regions of the Tunguska Rivers, tributaries of the Yenisei, where anomalies will be intense. Surpluses are also forecast in Tomsk and Kemerovo Oblasts in southwestern Siberia, though deficits are expected in the Republic of Khakassia farther south. In the Central Siberian Plateau, deficits will downgrade but severe to extreme anomalies will persist north of the Vilyuy Reservoir. Intense surpluses will persist in the Tyung River area of northern Sakha Republic, and shrink but remain intense in Transbaikal. Deficits in the Lena Delta will become exceptional while those west of the Sea of Okhotsk shrink and moderate.

In Central Asia, deficits will moderate in Mangystau, Kazakhstan, and moderate deficits will emerge in pockets of Turkmenistan and southeastern Uzbekistan. Surpluses are expected in much of Kyrgyzstan and central Tajikistan, and moderate deficits elsewhere in Tajikistan. Surpluses will persist in Akmola and Kostanay Regions in northern Kazakhstan, and southeast of Lake Balkhash.

From October through December, severe to exceptional deficits will persist from the Gulf of Ob past Norilsk while deficits in the Central Siberian Plateau nearly disappear and anomalies in Khakassia, the Lena Delta, and west of the Sea of Okhotsk shrink. Surpluses will persist in the middle region of the Ob River Watershed, northern Tom River region, the Tyung River region, and Transbaikal. Deficits will nearly disappear in Central Asia. Surpluses are forecast for Akmola, Kostanay, and southeastern Kazakhstan; Kyrgyzstan and central Tajikistan; and south of Lake Aydar in Uzbekistan.

The forecast for the final months – January through March 2023 – indicates deficits in Mangystau, the Gulf of Ob past Norilsk, the Central Siberian Plateau, Irkutsk, the Lena Delta, and west of the Sea of Okhotsk. Surpluses will persist in aforementioned areas of Russia and Central Asia and will emerge in regions of Kazakhstan north of Uzbekistan.

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

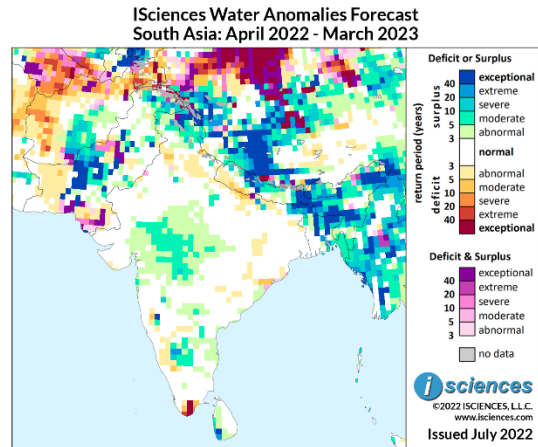
## South Asia

The 12-month forecast through March 2023 indicates severe to exceptional water surpluses from Bangladesh’s northern half into much of India’s Far Northeast and Bhutan. Surpluses will also be intense along the Gandak River in central Nepal, but some moderate deficits will skirt the nation’s border west of the river.

Most of India can expect near-normal water conditions. However, moderate surpluses are forecast from the Banas River in southern Rajasthan past the Tapi River in northern Maharashtra. Surpluses are also expected in southern Karnataka and will reach extreme intensity in a small pocket. In the nation’s far north, surpluses of varying intensity are forecast while in its far south, exceptional deficits are expected in southern Tamil Nadu. In Sri Lanka, surpluses are forecast in the southwest.

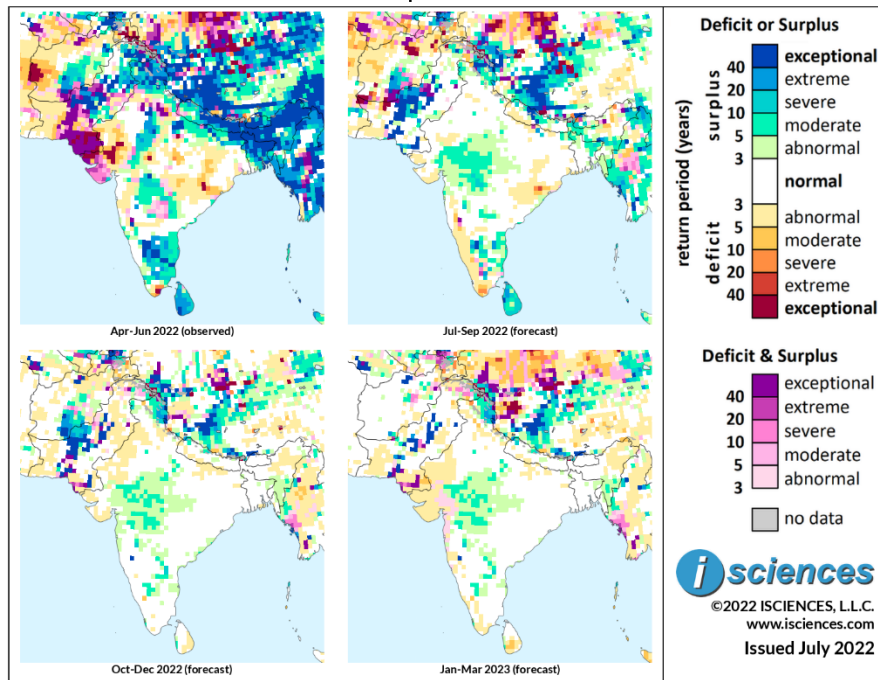
Surpluses will be widespread and intense in central Balochistan Province in Pakistan, downgrading as they cross the border into Kandahar Province in Afghanistan and extend north through Uruzgan Province. Pakistan’s Northern Areas (Gilgit-Baltistan) will also see surpluses. Widespread deficits ranging from moderate to severe are predicted for southwestern Afghanistan, reaching north along its borders with Central Asian nations well into the Hindu Kush.

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





ISciences Water Anomalies Forecast  
South Asia: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates widespread moderate surpluses in west-central India from western Madhya Pradesh reaching into Rajasthan, Gujarat, and Maharashtra. Moderate surpluses are also forecast in a belt of Telangana including Hyderabad, and surpluses of varying intensity in pockets of southern India. Moderate deficits are expected in Tamil Nadu's southern tip, but surpluses will dominate Sri Lanka. On the Bay of Bengal, a pocket of deficit is forecast in central Odisha. In India's far north, surpluses are expected in Jammu and Kashmir. Bangladesh can expect moderate surpluses in the northeast and extreme north, leading into nearby regions of India. Surpluses are forecast in Nepal on the Gandak River.

In Pakistan, surpluses will be widespread and intense in the west-central region reaching through the city of Quetta and well past Kandahar, Afghanistan. Deficits are forecast in pockets of Afghanistan in the far north, along the Central Asia borders, and to the south bordering Pakistan.

From October through December, deficits will retreat, and near-normal conditions will return to Bangladesh, Far Northeast India, Bhutan, and Nepal. Surpluses will persist with intensity from Pakistan into Afghanistan. Moderate surpluses will continue in west-central India and pockets of Andhra Pradesh and Karnataka, and surpluses of greater intensity in far northern India.

The forecast for the final months – January through March 2023 – indicates persistent surpluses in India in a pattern much like that of the forecast through December. Surpluses will shrink in Pakistan and nearly disappear in nearby regions of Afghanistan.

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

## Southeast Asia and the Pacific

The 12-month forecast through March 2023 indicates widespread surpluses of varying intensity in several regions of Southeast Asia and surpluses in many pockets throughout the Pacific. Deficits are forecast in Sumatra and Papua New Guinea.

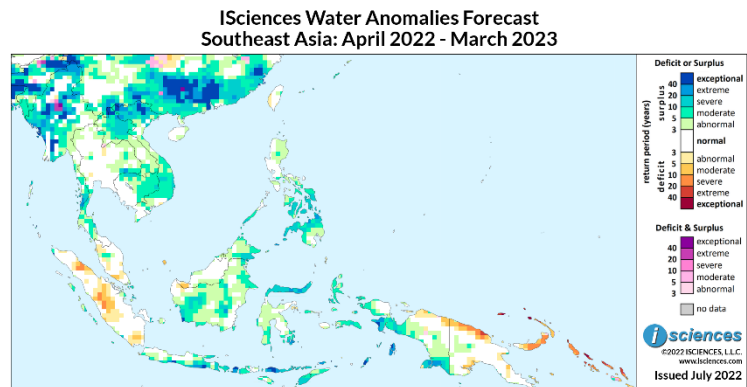
In Myanmar, surpluses of varying intensity are forecast throughout much of the nation with a pocket of transitional conditions (pink/purple) on the Irrawaddy River near Mandalay. Near-normal water conditions are forecast for most of Thailand though surpluses are expected south of the Mun River along the Cambodian border and in much of Peninsular Thailand. As well as surpluses on its Thai border, Cambodia will see moderate surpluses in its eastern half. Surpluses will be widespread and severe in northern Laos and northern Vietnam, reaching extreme to exceptional intensity in Vietnam's northeast near the Chinese border. Generally moderate surpluses are expected in Vietnam's South Central Coast region and Central Highlands.

In the Philippines, severe surpluses are predicted for northern Luzon and the central islands.

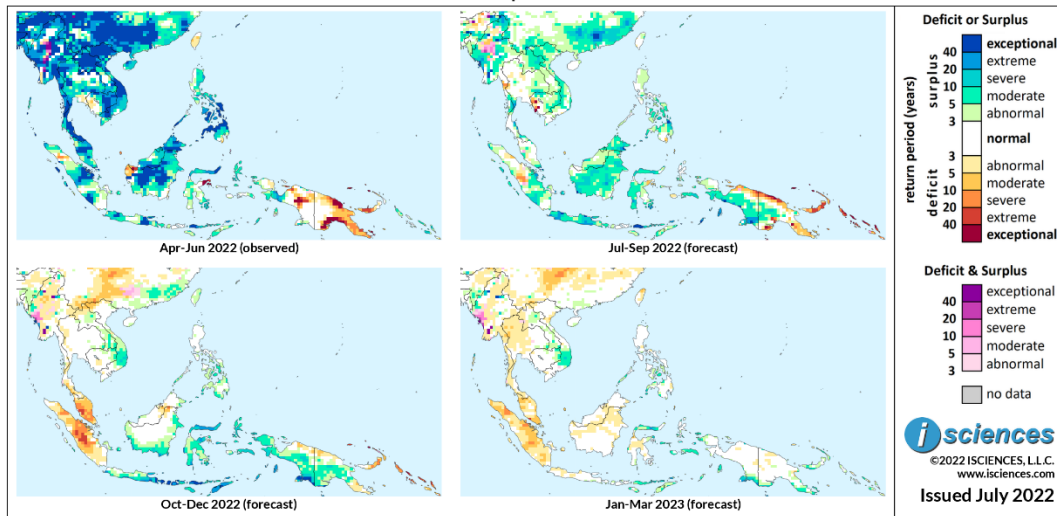
Though normal water conditions are forecast for most of Malaysia, a few anomalous pockets are expected including moderate deficits south of the Kuching metropolitan area on Borneo and surpluses in the northeast. Surpluses are predicted for several regions of Indonesian Borneo as well and will be particularly widespread in the southwest. Surpluses are also forecast in pockets of Sulawesi, the Maluku Islands, Java, the Lesser Sunda Islands, and several regions along Papua, Indonesia's south coast.

Sumatra is forecast to experience moderate to extreme deficits around the city of Medan in the north and in the central region of the island. Deficits are also forecast in Papua New Guinea along its north coast, and in New Britain and the Solomon Islands.

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



ISciences Water Anomalies Forecast  
Southeast Asia: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates that surpluses will shrink and downgrade but remain widespread. Anomalies are expected to be moderate overall but with some pockets of greater intensity. In Southeast Asia, surpluses of varying intensity are forecast in Myanmar and near-normal conditions in much of Thailand. Generally moderate surpluses are expected in: northern Laos; northern Vietnam, its narrows, and the Central Highlands into Cambodia; and the central Thai-Cambodian border and southeastern Cambodia. Deficits are forecast in pockets of western Cambodia. Surpluses are forecast in much of Indonesia and Malaysian Borneo. Anomalies will be intense in pockets of Java and Flores Island. A pocket of moderate deficit is forecast in central Sumatra, but deficits will be more intense in New Guinea on the north coast, Bird’s Tail Peninsula (Papuan Peninsula), and pockets on the Gulf of Papua, as well as in New Britain and the Solomon Islands.

From October through December, surpluses will shrink considerably in Southeast Asia with moderate anomalies persisting in Vietnam’s South Central Coast and Central Highlands, and southern Laos. Moderate to extreme deficits are forecast for Peninsular Malaysia and Sumatra, while deficits in New Guinea shrink and moderate. New Britain and the Solomons, however, will continue to see deficits. Surpluses are expected in pockets of the Philippines, coastal Indonesian Borneo, Sulawesi, the Lesser Sundas and Malukus, and western and southern New Guinea.

The forecast for the final months – January through March 2023 – indicates deficits in Sumatra and Peninsular Malaysia. Surpluses are forecast in the Central Highlands of Vietnam and pockets in the Philippines, Sulawesi, the Lesser Sundas and Malukus, and coastal New Guinea.

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

## East Asia

The 12-month forecast for East Asia through March 2023 indicates widespread, intense water surpluses in southern China throughout the Pearl River Basin (Zhujiang River) with exceptional anomalies in Guangxi and Guangdong. In Fujian on the southeast coast, surpluses will be moderate to exceptional. Anomalies of lesser intensity are forecast for pockets of Sichuan.

Northeast China, too, can expect surpluses in a vast area from Liaoning past the Chinese border.

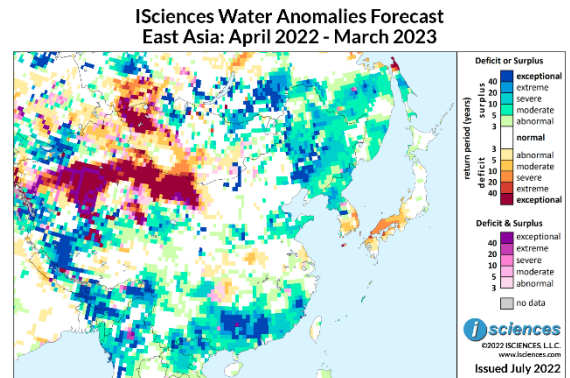
Anomalies will be severe to exceptional through western regions of Liaoning, Jilin, and Heilongjiang and eastern Inner Mongolia. In the Yellow River Watershed (Huang He River), surpluses are expected in the lower and upper regions.

Widespread, exceptional deficits will reach from western Inner Mongolia across a vast belt in Xinjiang Uygur through the city of Hami and the Taklimakan Desert with pockets of transitional conditions (pink/purple) as well. 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.

Surpluses will be widespread in North Korea, extreme near Pyongyang. In South Korea, exceptional surpluses are expected in a band from Incheon on the Yellow Sea to the Lower Namhan River region, but moderate to severe deficits will be widespread across the nation's southern half. Japan can also expect moderate to severe deficits in southern Honshu and pockets of deficit in Kyushu and Shikoku.

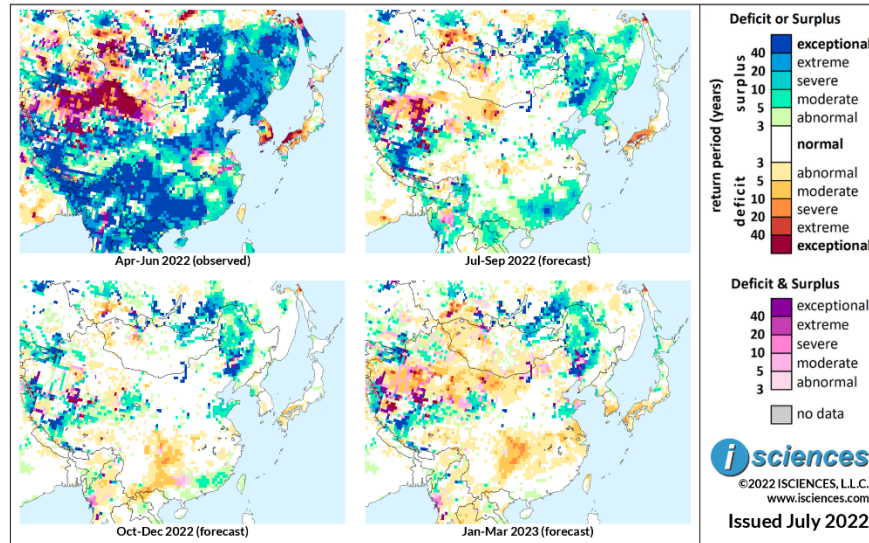
In Mongolia, severe deficits are forecast in the western Gobi Desert, moderating along a path leading northwest, then becoming exceptional in the lakes region of the far northwest. Surpluses are forecast from the Ider River region in the north to Lake Khovsgol, and in the central Hentiyn Mountains in the northeast.

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



Based on observed data through June 2022 and forecasts through March 2023

ISciences Water Anomalies Forecast  
East Asia: April 2022 - March 2023



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates widespread surpluses in Southeast China and the Pearl River Basin. Anomalies will be moderate overall but severe to exceptional in the Bei River Watershed of Guangdong, a northern tributary of the Pearl, and moderate to severe in eastern Guangxi and northern Fujian. Deficits are forecast in northeastern Sichuan. In the Yellow River Watershed, surpluses are forecast in the lower reaches and the Shandong Peninsula and in southwestern Shanxi. Widespread surpluses will persist in Northeast China, but the extent of exceptional anomalies will shrink. In western China, moderate to severe deficits are expected in western Inner Mongolia and deficits of greater intensity in central Xinjiang. Intense surpluses will persist in central Tibet. Surpluses, generally moderate, are forecast for North Korea and from Incheon to the Lower Namhan River in South Korea. In Japan, severe to extreme deficits are forecast in southern Honshu and in Kyushu and Shikoku.

From October to December, surpluses will shrink but remain widespread in Northeast China, and primarily moderate surpluses will persist in the Lower Yellow River region and Shandong Peninsula. Surpluses in Southeast China will shrink considerably with moderate anomalies lingering in Guangdong and Fujian. Deficits will retreat from northwestern China but increase in Sichuan and emerge in Chongqing, Guizhou, and pockets of Hubei, Guangxi, and Yunnan. Surpluses will persist in Qinghai and downgrade slightly in Tibet. Conditions are expected to be relatively normal in Korea and Japan, with some moderate surpluses persisting south of Pyongyang and moderate deficits in southern Honshu.

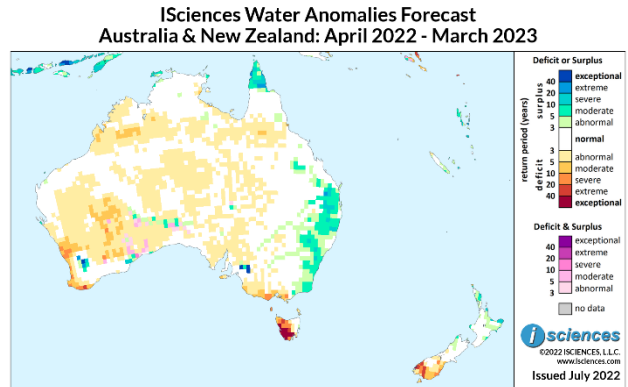
The forecast for the final three months – January through March 2023 – indicates that severe deficits will increase in Chongqing and Guizhou. Deficits, moderate overall, are forecast for the Lower Yangtze River Watershed, western Inner Mongolia through Xinjiang, southern South Korea, and southern Japan. Areas of surplus include Northeast China, the Lower Yellow River Watershed, Tibet, and pockets in northern Japan.

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

## Australia & New Zealand

The 12-month forecast through March 2023 indicates water surpluses in eastern Australia from the Wide Bay-Burnett region of Queensland through East Gippsland, Victoria, and inland through the Central West region of New South Wales. Anomalies will be moderate overall with a few pockets of severe intensity.

In Queensland's Far North, surpluses are expected north of the Holroyd River in Cape York Peninsula. Elsewhere in Australia, pockets of surplus are forecast in the Upper Avon River catchment of Western Australia and near the state's central southern coast, and in the Lower Murray River region of South Australia.



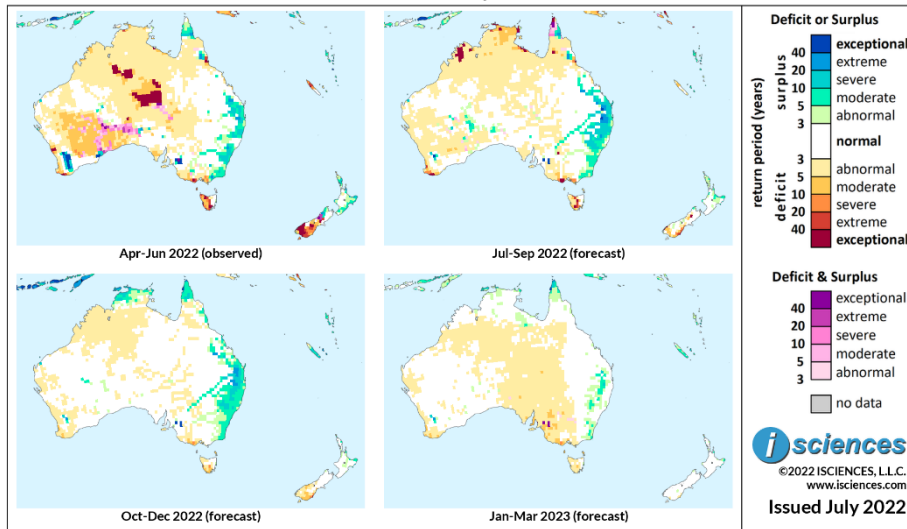
Based on observed data through June 2022 and forecasts through March 2023

Exceptional deficits will dominate southwestern Tasmania, the Derwent Estuary, and Hobart, and though downgrading, deficits will be severe in the northwest. Across the Bass Strait, moderate to severe deficits will skirt much of coastal Victoria through Melbourne. In Western Australia, moderate to severe deficits are expected in the southwest from the Wheatbelt's coastal region through Perth, becoming more intense as they reach Albany in the south. Moderate deficits are forecast in the state's south-central area in the Goldfields-Esperance region and in the Fitzroy and Ord River regions of the Kimberley in the north.

In New Zealand, extreme deficits are predicted for Southland in South Island, downgrading through the Otago and Canterbury regions. In North Island, surpluses are forecast in East Cape and Northland.

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

**ISciences Water Anomalies Forecast  
Australia & New Zealand: April 2022 - March 2023**



Based on observed data through June 2022 and forecasts through March 2023

The forecast through September indicates that widespread surpluses in eastern Australia will increase. Anomalies will intensify west of Brisbane, Queensland, becoming extreme, and will increase west of Rockhampton. Mixed conditions are expected in Queensland’s Far North. In New South Wales, severe surpluses will increase in the northeast and moderate surpluses will emerge on the Darling River. Across northern Australia, generally moderate deficits will emerge in Arnhem Land in Top End, Northern Territory, and exceptional deficits in the Kimberly in Western Australia (WA). Deficits will linger on WA’s southwest coast from Perth to Albany while surpluses linger in the Avon River region and re-emerge in pockets of the Great Victoria Desert. Along much of Victoria’s coast, deficits will persist, becoming exceptional in Cape Otway. Deficits will persist in Tasmania, downgrading in the west but severe in Hobart and extreme in the Derwent Estuary. Deficits in South Island, New Zealand will shrink but remain intense along the southeast coast near Dunedin. Some surpluses will linger in North Island on the Bay of Plenty and north of Auckland. Moderate deficits are expected in northern New Caledonia.

From October through December, widespread surpluses will persist in eastern Australia, moderate overall but extreme west of Brisbane and severe in New South Wales west of Armidale and near Dubbo. Surpluses will re-emerge in the Cape York Peninsula of Far North Queensland and emerge on the coast near Cairns. Surpluses will also emerge in Top End, Northern Territory while deficits in Arnhem Land retreat. Moderate to severe deficits will linger on Victoria’s western coast, in southern Tasmania, and in southern regions of South Island, New Zealand. Surpluses will emerge in New Caledonia.

The forecast for the final months – January through March 2023 – indicates some lingering surpluses in southeastern Queensland and eastern New South Wales, Cape York, and New Caledonia. Moderate deficits will persist in Victoria’s coastal southwest and will emerge in pockets spanning Victoria’s border into South Australia.

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