

Two cities evacuated as Tulare Lake reappears, USA

Landsat TM acquired on **04 May 1984** at 18:01:08 UTC
Sentinel-2 MSI acquired on **06 April 2022** at 18:39:19 UTC
Sentinel-1 CSAR IW acquired on **12 April 2022** at 14:00:14 UTC
Sentinel-2 MSI acquired on **06 April 2023** at 18:39:21 UTC
Sentinel-1 CSAR IW acquired on **07 April 2023** at 14:00:19 UTC

Author(s): Sentinel Vision team, VisioTerra, France - svp@visioterra.fr

Keyword(s): Flooding, emergency, hydrology, endorheic basin, agriculture, United States, USA

[2D Layerstack](#)

Fig. 1 - S1 (07.04.2023) - Tulare Lake was once a permanent lake in the Central Valley of California, USA.

[2D view](#)

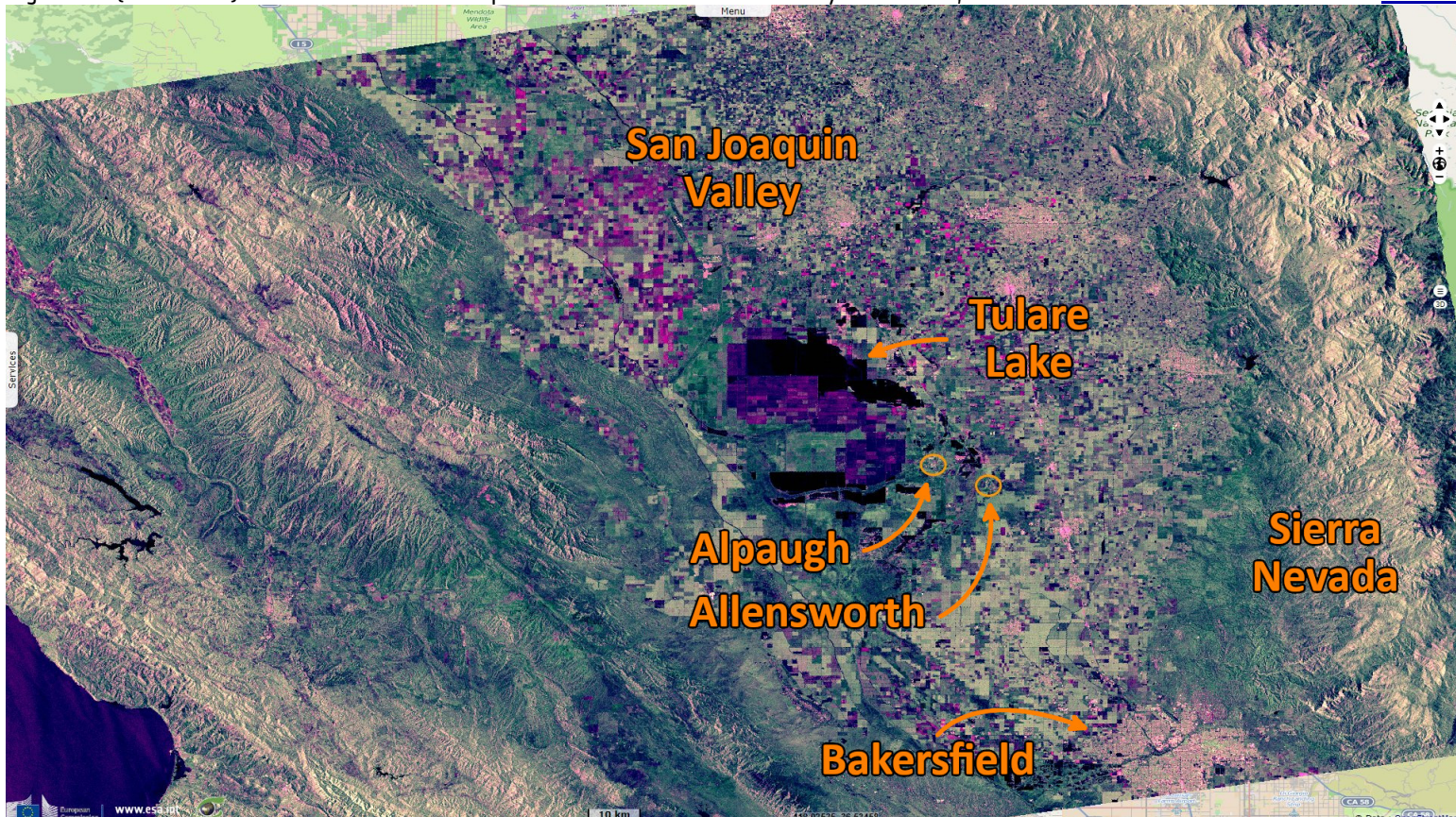


Fig. 2 - S2 (06.04.2022 / 06.04.2023) - The lake reappeared in 2023 following intense precipitations.

[3D view](#) [3D view](#)

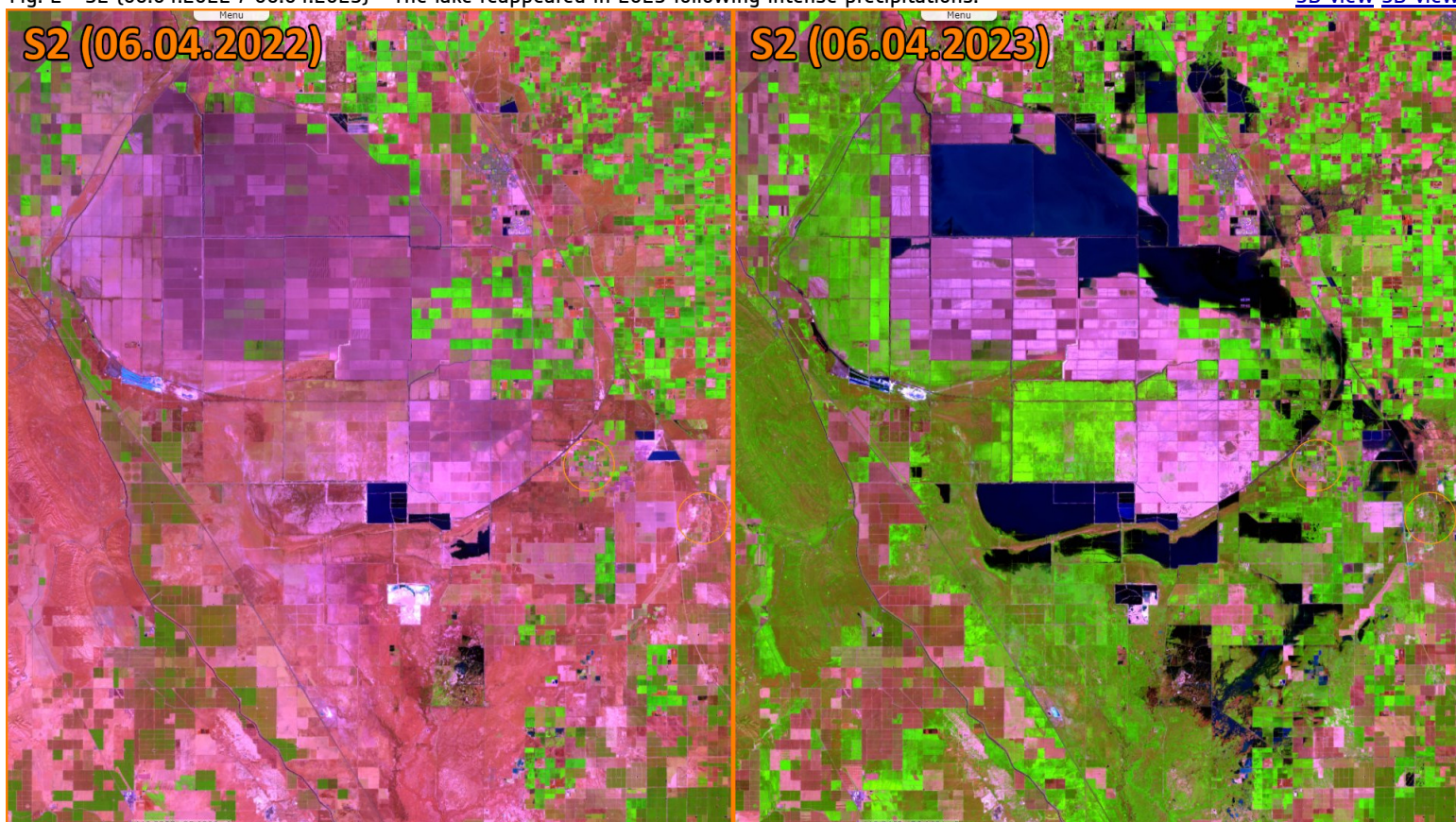
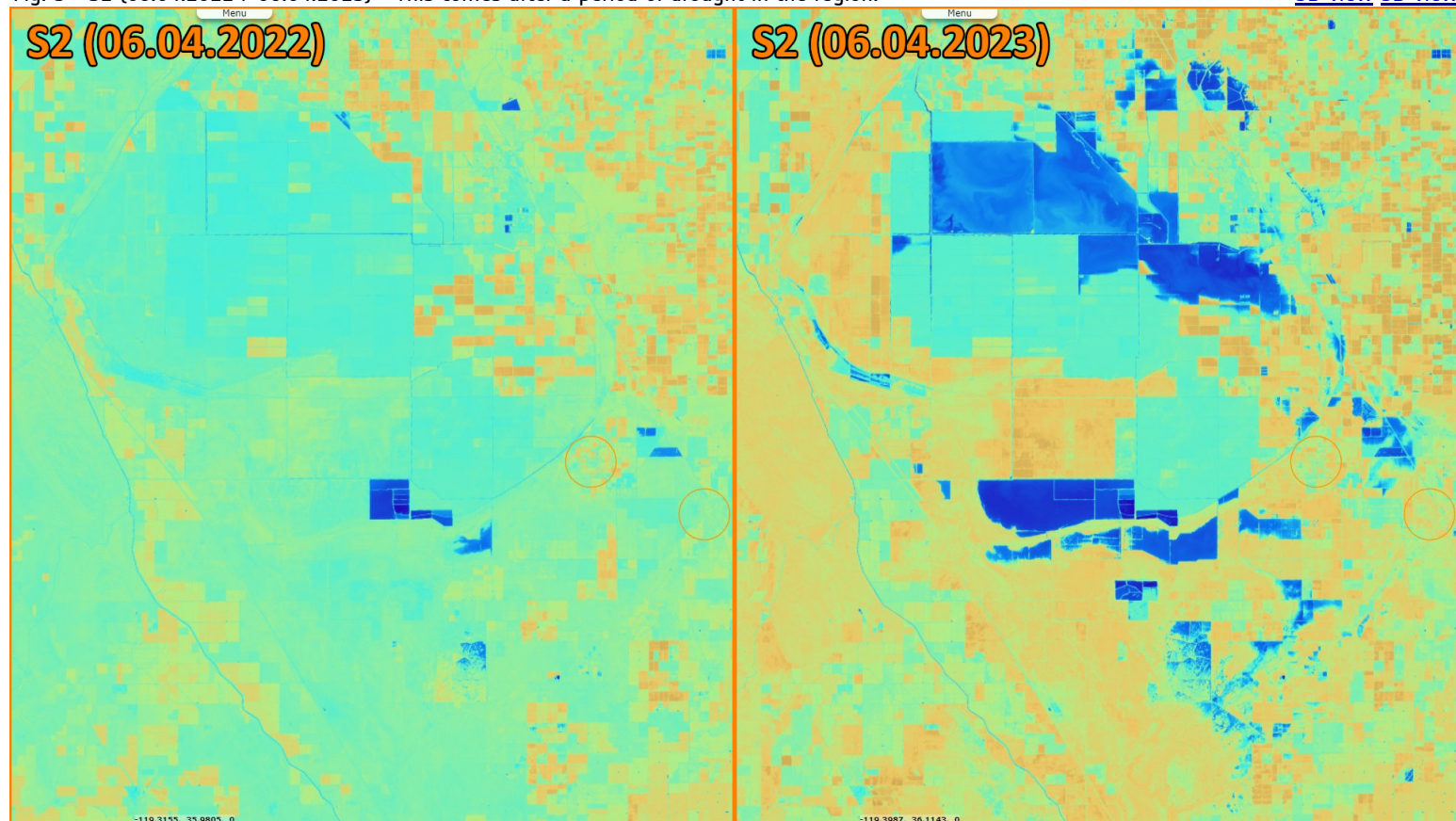


Fig. 3 - S2 (06.04.2022 / 06.04.2023) - This comes after a period of drought in the region.

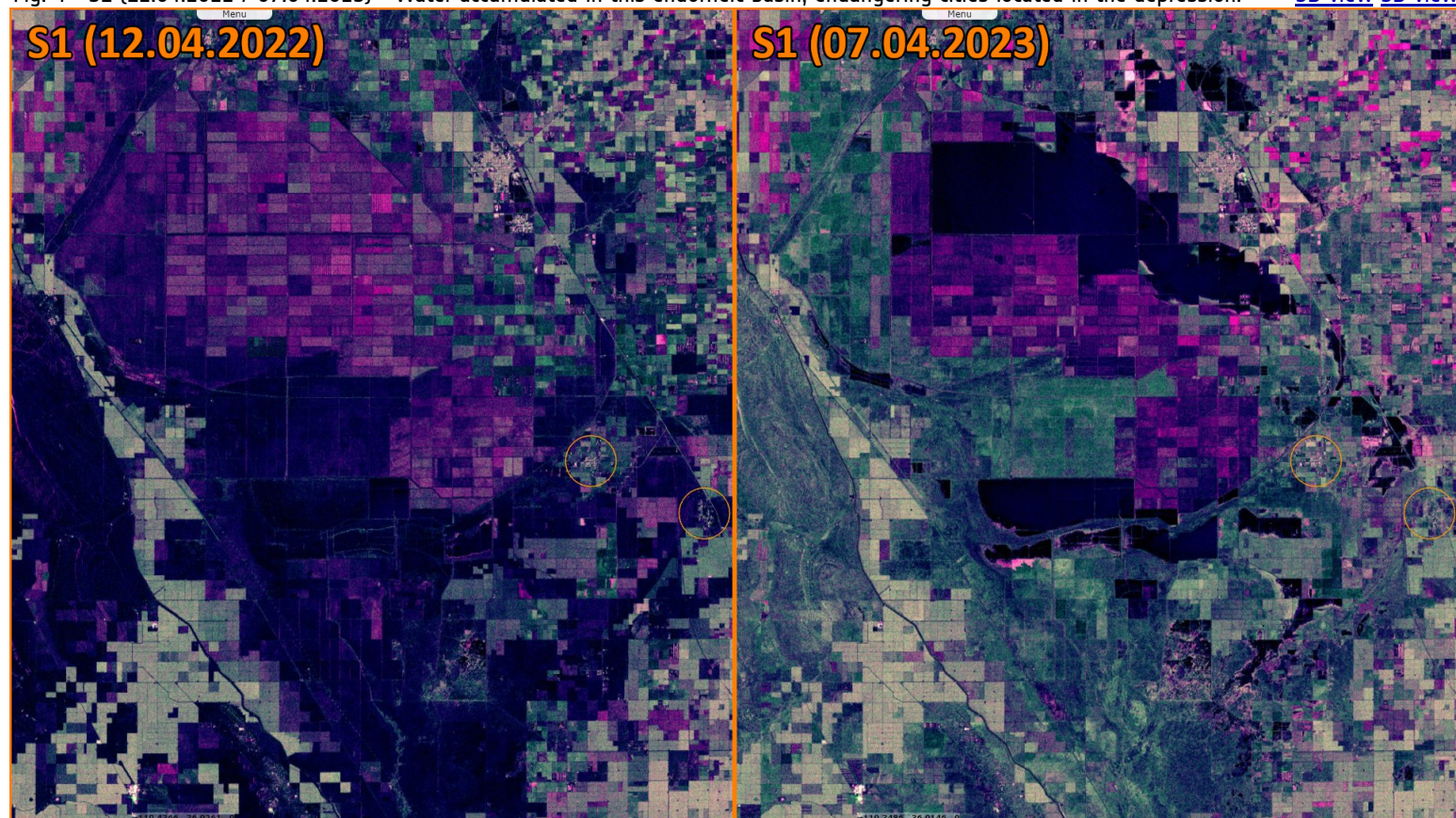
[3D view](#) [3D view](#)



Adam Beam of ABC News [wrote](#): "This year, Tulare lake started to fill again after the state was hit with a more than a dozen strong storms known as atmospheric rivers packed with massive amounts of rain and snow. What had been a dry lake bed filled with crops and crisscrossed by powerlines began to go underwater. Now, water covers more than 410 square kilometers. Most of that flooding is farmland. But a month ago, computer models showed rising waters threatened homes in the communities of Corcoran, Stratford, Alpaugh and Allensworth."

Fig. 4 - S1 (12.04.2022 / 07.04.2023) - Water accumulated in this endorheic basin, endangering cities located in the depression.

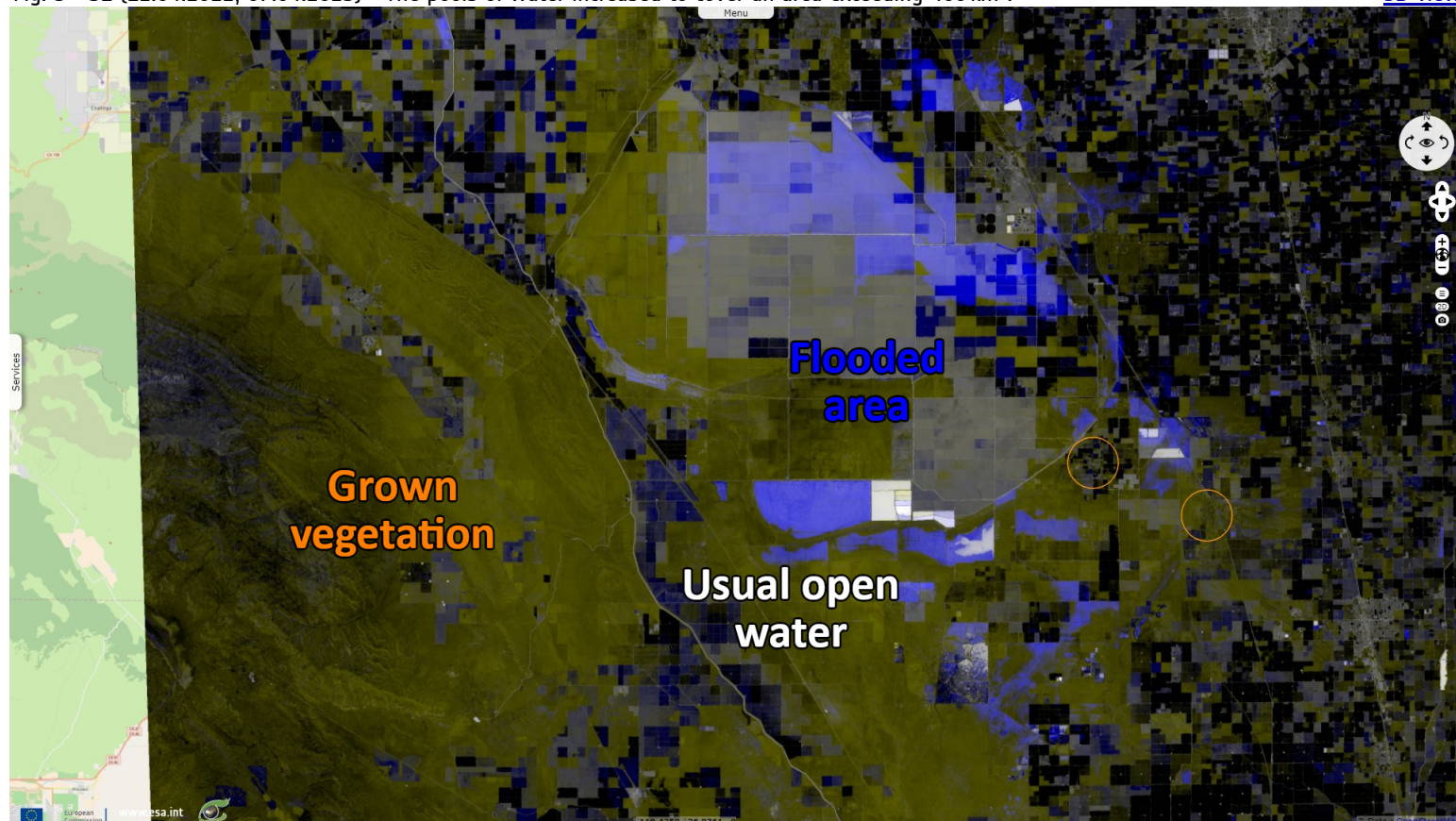
[3D view](#) [3D view](#)



Thaddeus Miller [reminds](#) in the The Fresno Bee: It brought "much of the state out of the drought but also damaging infrastructure and homes with flooding. The Tulare Lake basin has had the roughest time from the pooling of a body of water that last was seen in 1983."

Fig. 5 - S1 (12.04.2022, 07.04.2023) - The pools of water increased to cover an area exceeding 400 km².

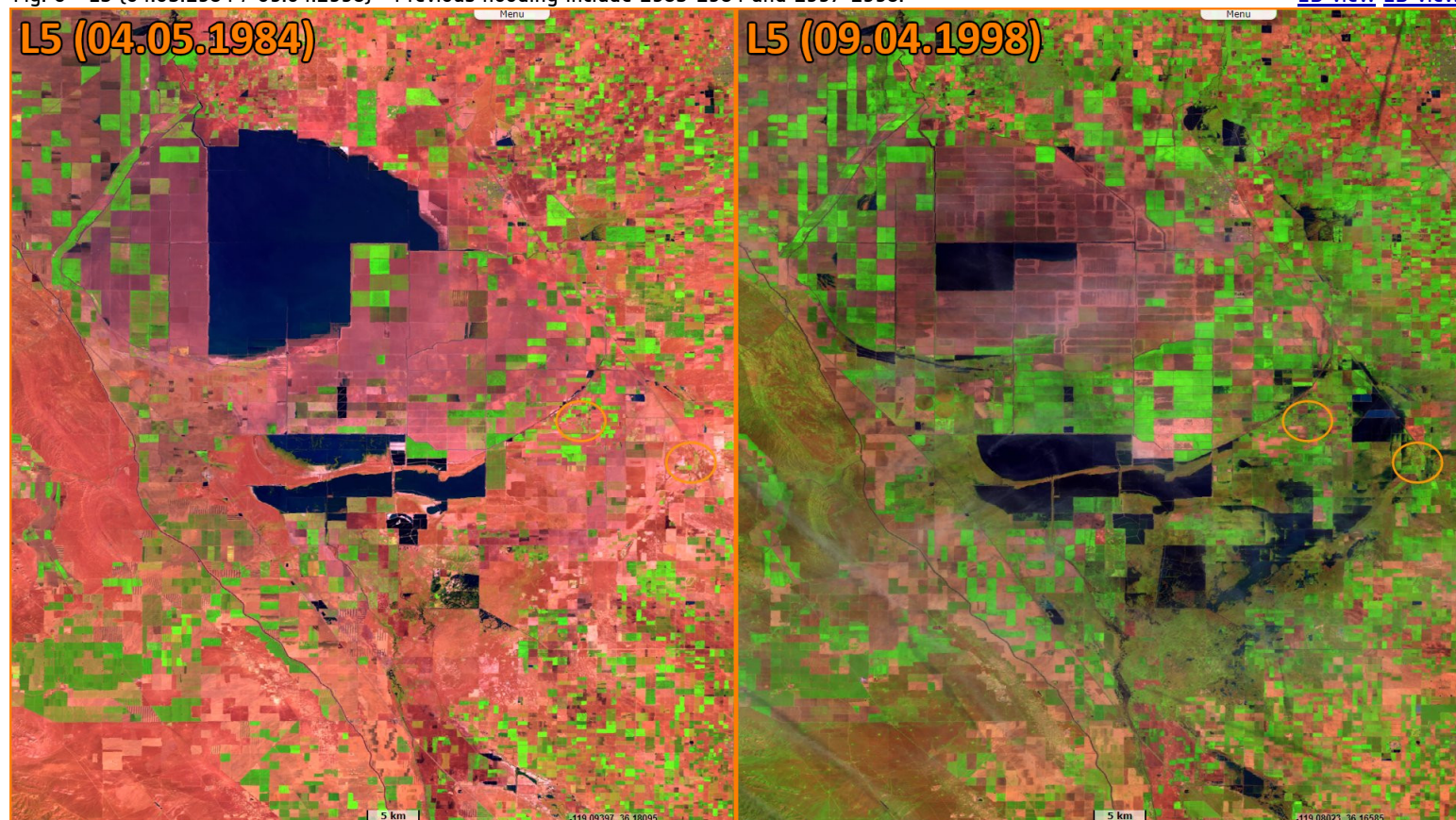
[3D view](#)



"While the historic lake was large, it was also shallow, about 11 m deep in high-water years. Some have speculated the lake flooding will be around for a significant time. The 1983 flooding took about two years to dry out, according to John T. Austin, a now-retired scientist with the National Park Service and author of 'Floods and Droughts in the Tulare Lake Basin.' The Corcoran clay layer and other factors slow the water from seeping. 'Only about 4% of the water goes through the ground; an enormous amount just evaporates,' he added."

Fig. 6 - L5 (04.05.1984 / 09.04.1998) - Previous flooding include 1983-1984 and 1997-1998.

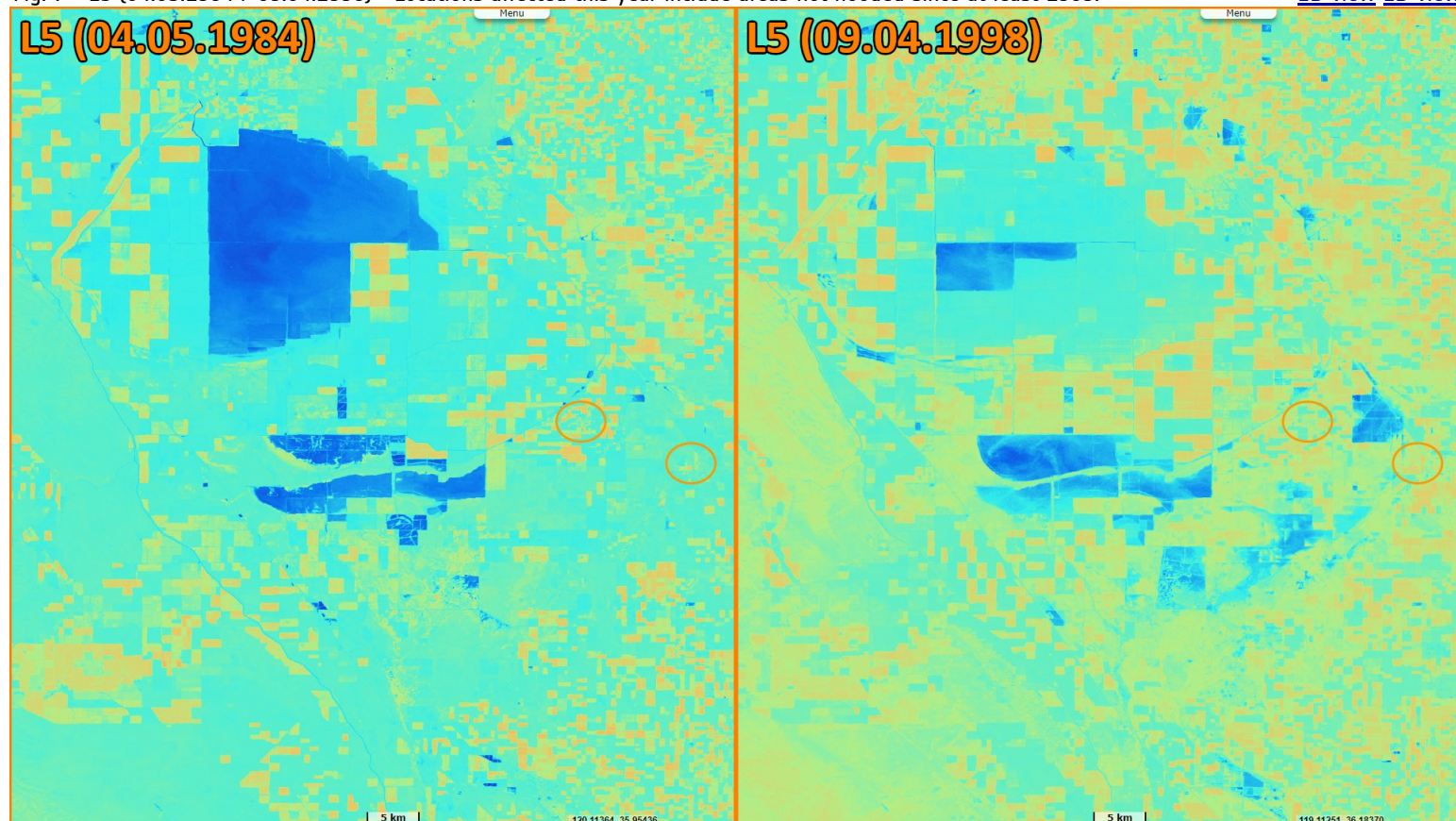
[2D view](#) [2D view](#)



The past size of Tulare Lake is [detailed](#) by Ellen Gorelick, Executive Director-Chief Curator of the Tulare Historical Museum: In 1868, the lake covered almost 2600 km². The first band of white settlers into the San Joaquin Valley found the lake more than 64 km long and 32 km wide. In flood season, it has measured as much as 120 km in length.

Fig. 7 - L5 (04.05.1984 / 09.04.1998) - Locations affected this year include areas not flooded since at least 1969.

[2D view](#) [2D view](#)



"The end result of thousands of years of rain and mountain runoff settling in the lowest part of the basin created the 'largest fresh water lake west of the Mississippi.' The last discharge into the San Joaquin River was in 1878. The depiction in 1879 shows the start of many years of decline in the Lake's volume."

Fig. 8 - L5 (02.05.1989), S2 (12.04.2016) - Open water area is usually limited to small ponds.

[2D view](#) [2D view](#)

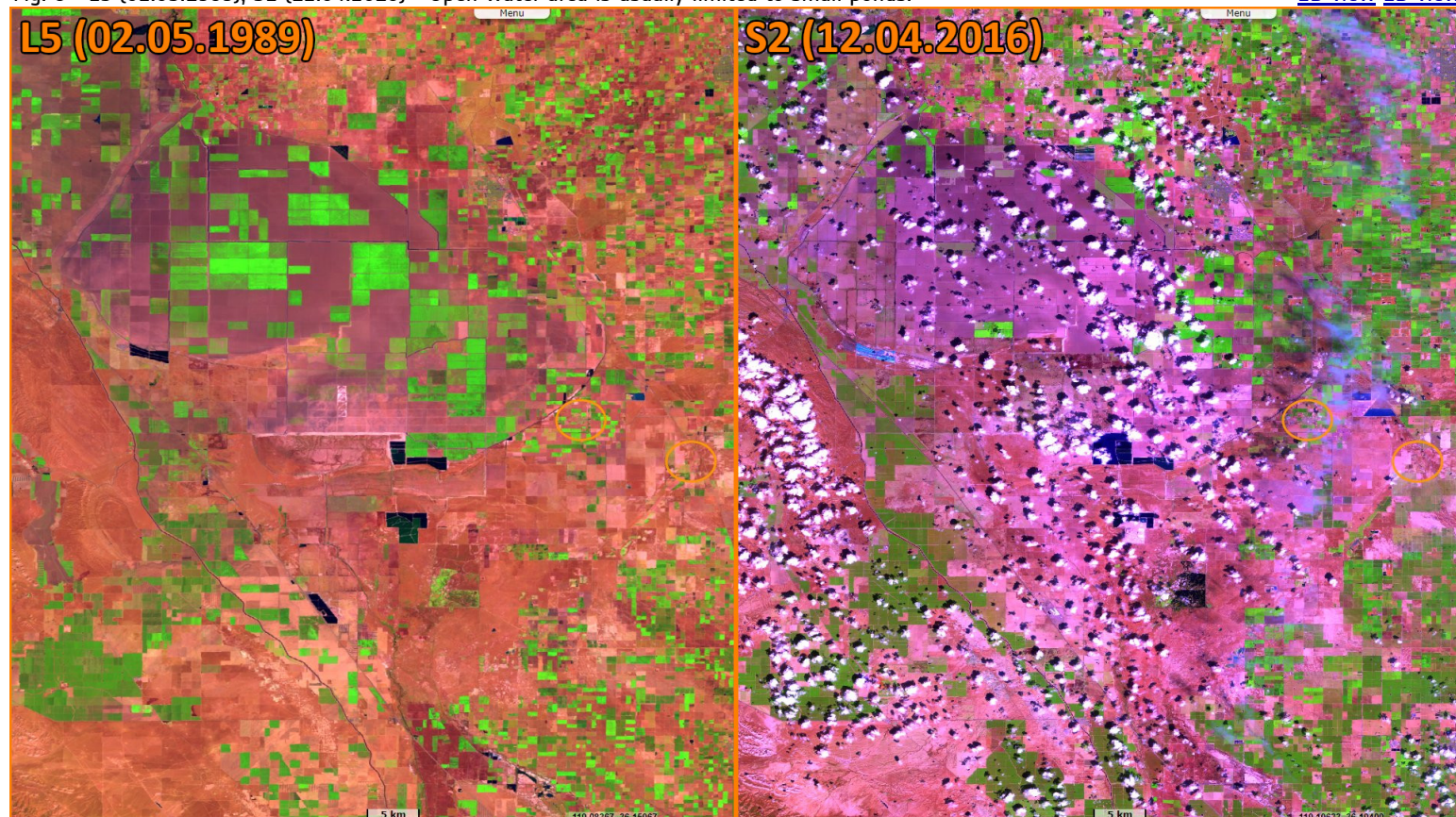


Fig. 9 - L5 (02.05.1989), S2 (12.04.2016) - 1989, 2016 or 2022 were years with slightly less water than usual.

[2D view](#) [2D view](#)

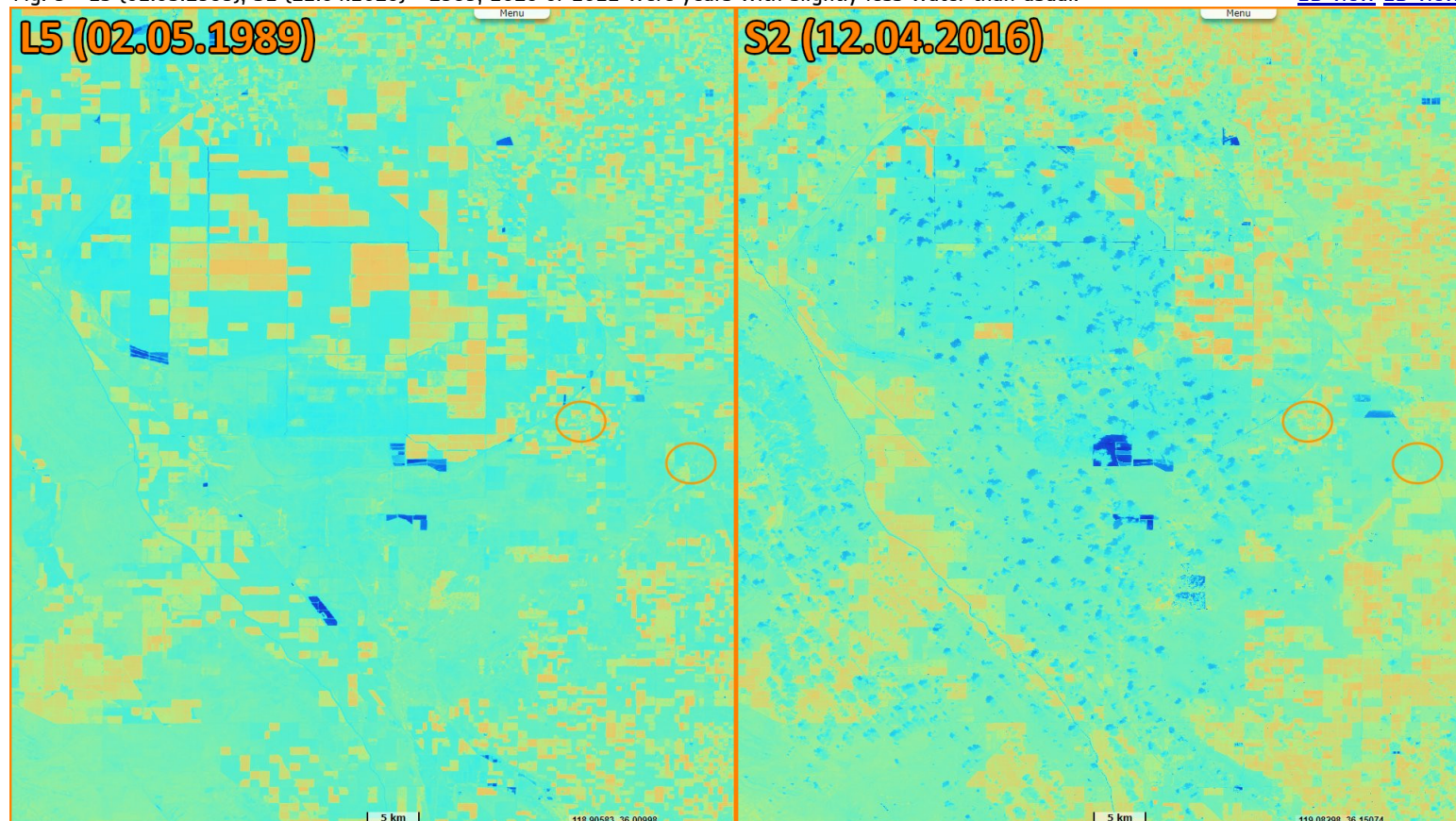
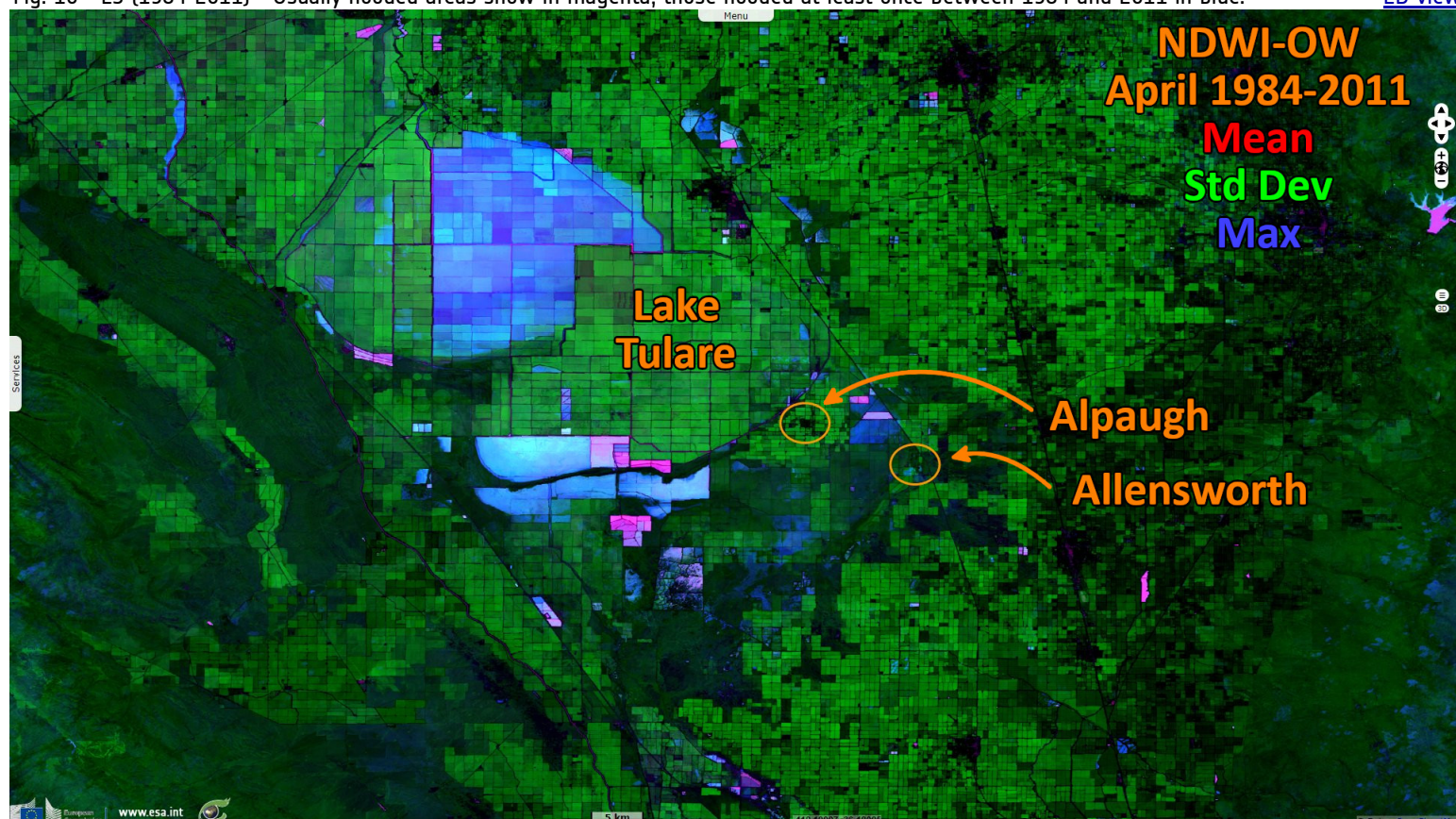


Fig. 10 - L5 (1984-2011) - Usually flooded areas show in magenta, those flooded at least once between 1984 and 2011 in blue.

[2D view](#)



The views expressed herein can in no way be taken to reflect the official opinion of the European Space Agency or the European Union.
Contains modified Copernicus Sentinel data 2023, processed by VisioTerra.

More on European Commission space:							
More on ESA:				S-1 website	S-2 website	S-3 website	
More on Copernicus program:				Scihub portal	Cophub portal	Inthub portal	Colhub portal
More on VisioTerra:				Sentinel Vision Portal	Envisat+ERS portal	Swarm+GOCE portal	CryoSat portal