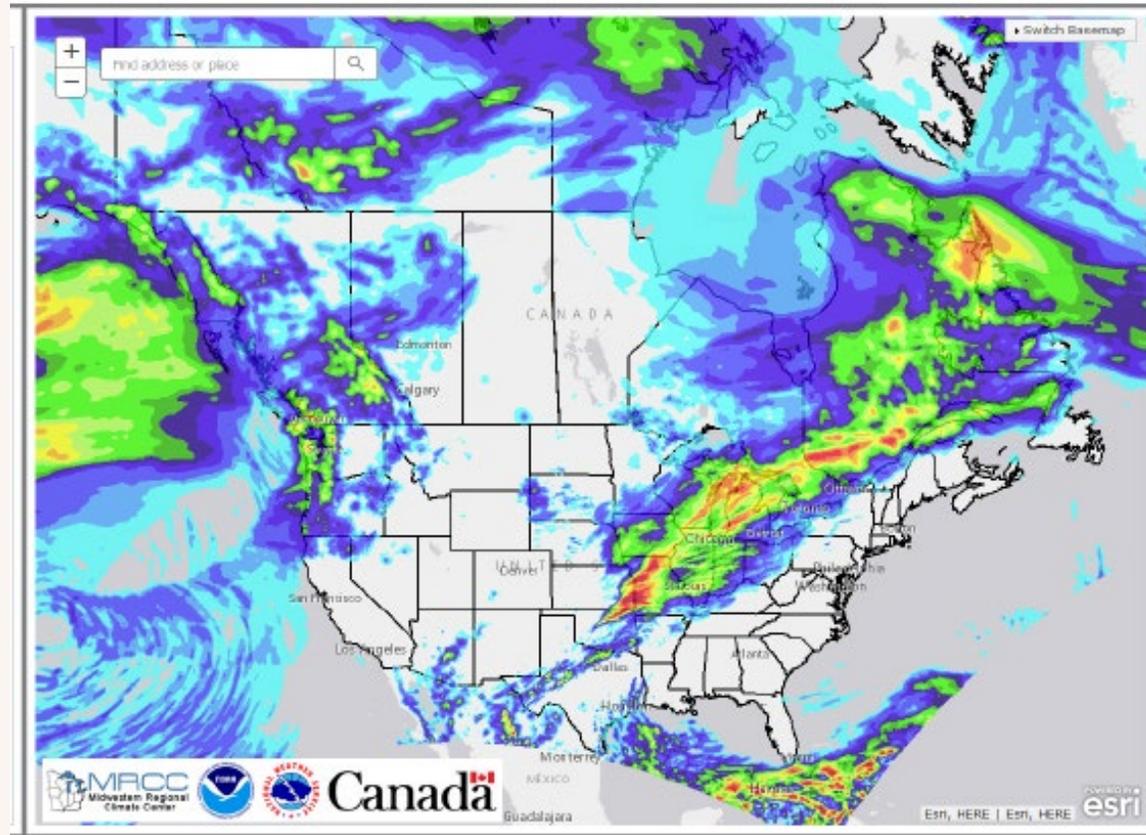




Bi-National Precipitation Tool



Developers: Zoe Zaloudek, Leslie Stoecker, Travis Ashby

MRCC Webinar Workshop, Jan. 2021



Objective

- Support request of International Joint Commission and the Coordinating Committee on the Great Lakes Basic Hydraulic and Hydrologic Data to improve precip. monitoring and science in Great Lakes region
- Combine Canadian (CaPA, from Environment Climate Change Canada, ECCC) and U.S. (MPE) precip. estimates into one consistent and continuous graphical/data product over U.S. and Canada
- Give historical context to precip. estimates through computation of anomalies at various timescales



Input Data

Canadian Precipitation Analysis (CaPA/RDPA)

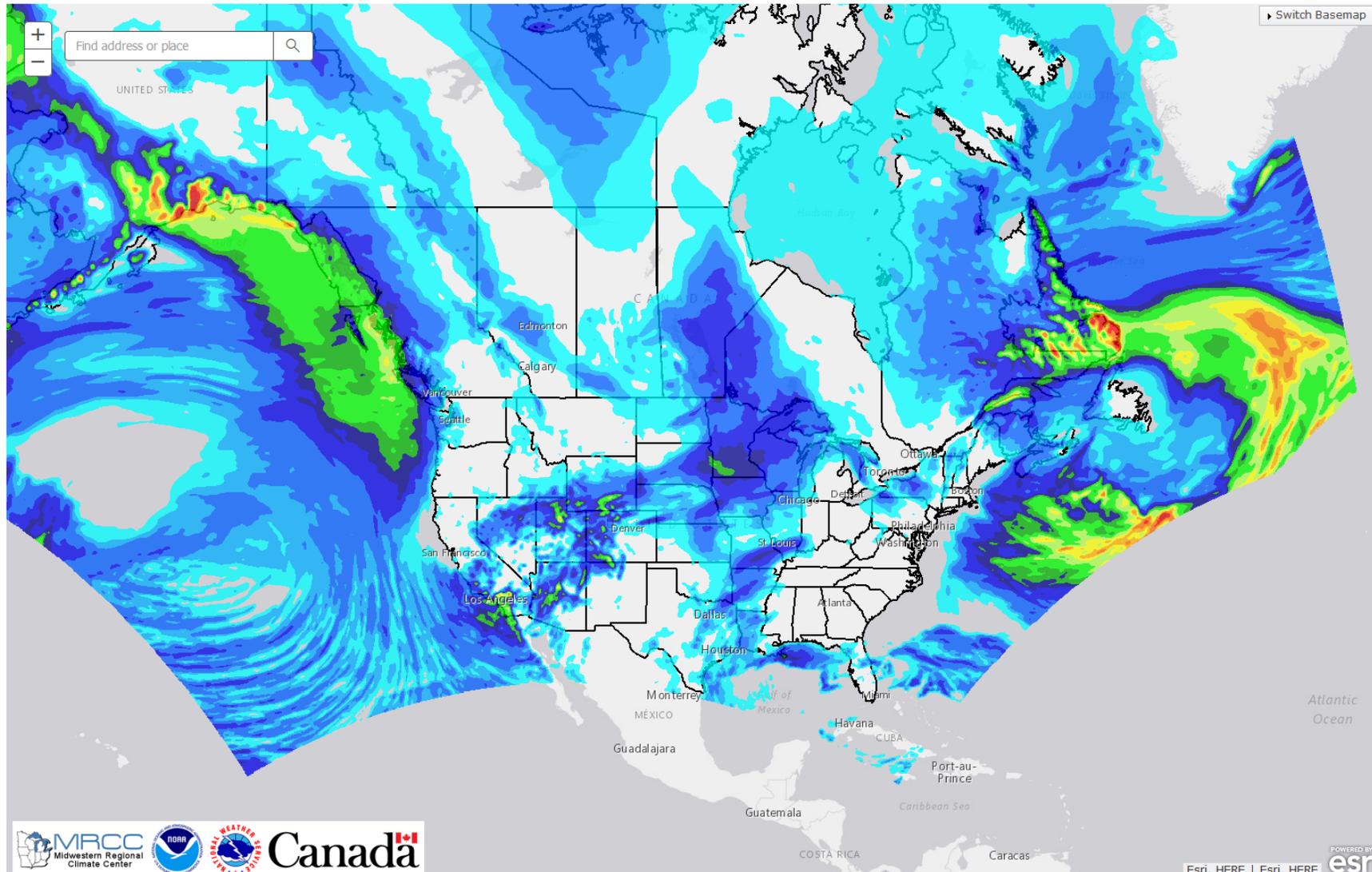
- **Coverage:** North America
- **Source Data:** Rain gauge, radar reflectivity, GOES imagery
- **Grid Spacing:** 10 km
- 1st guess field from GEM NWP model

Multi-sensor Precipitation Estimate (MPE)

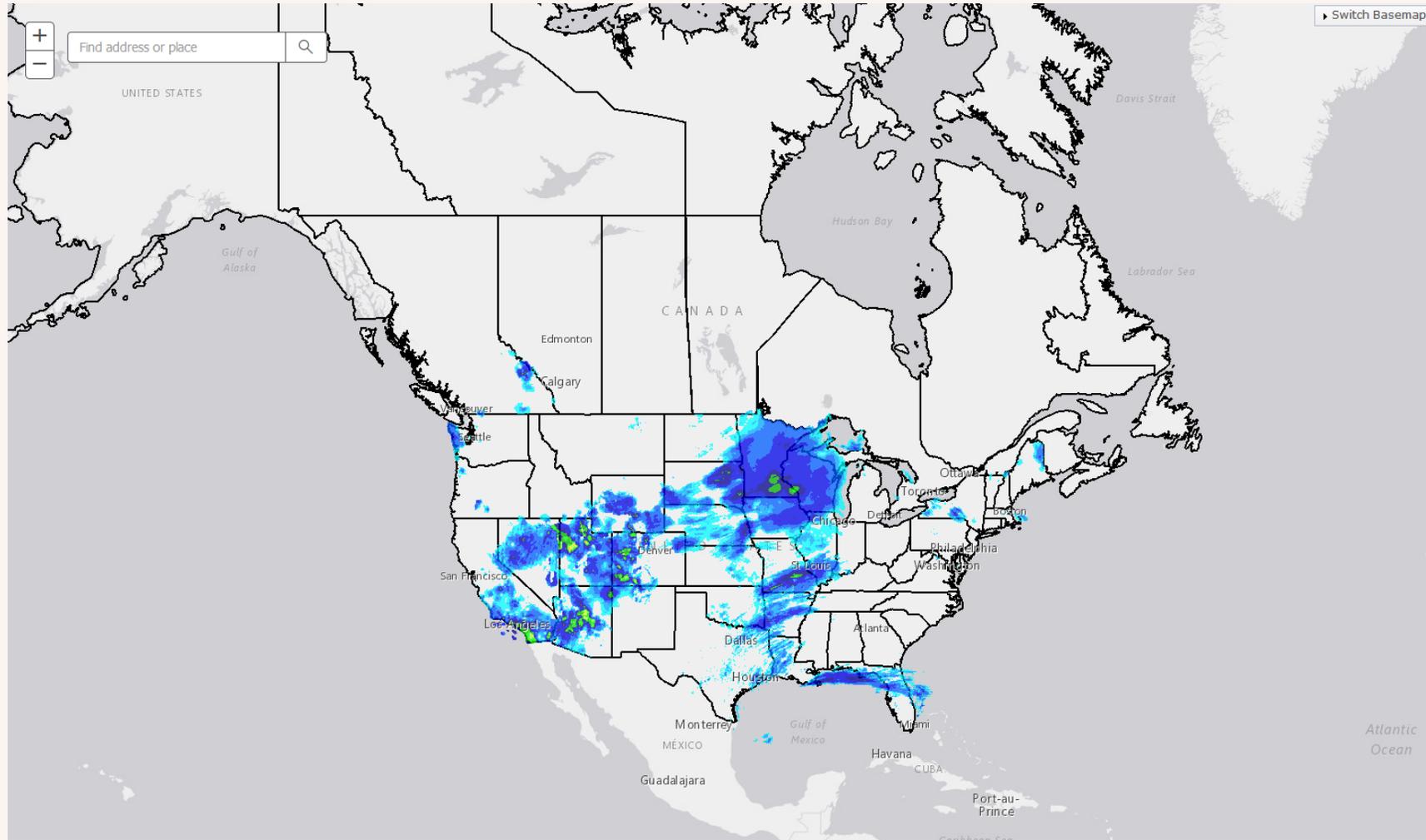
- **Coverage:** Contiguous 48 states
- **Source Data:** NWS/DOD radars, hourly rain gauge, satellite precip. estimates
- **Grid Spacing:** ~4 km
- River Forecast Centers produce manual estimates which are combined onto analysis grid

24-hr accumulation used for each input

CAPA



MPE

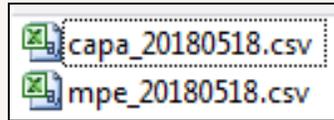




Bi-National Precipitation

<https://mrcc.illinois.edu/gismaps/naprecip.htm>

- Gather Input Data



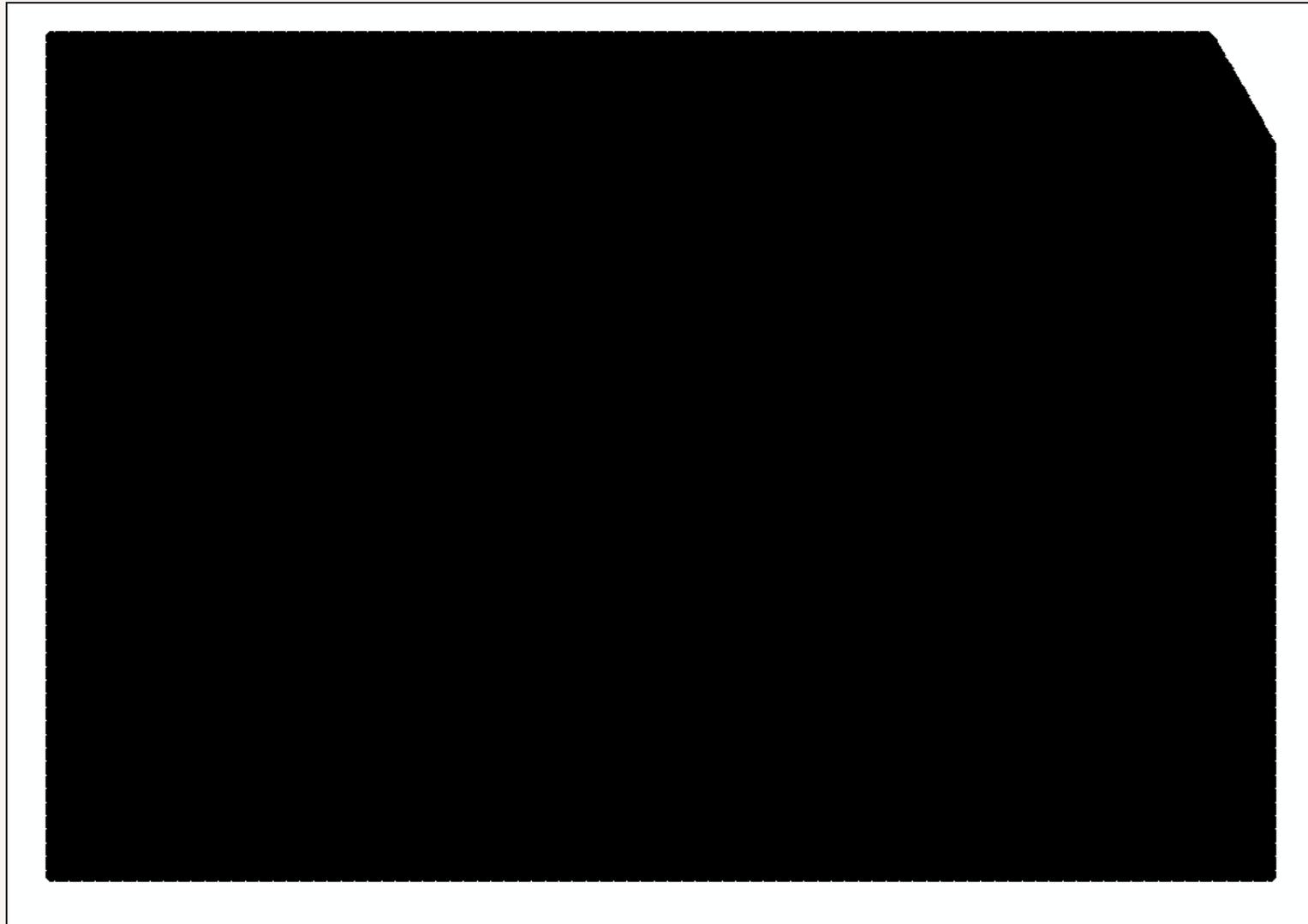
lat	lon	prcp_mm
26.3684	-79.4661	12.1
26.3541	-79.4327	13
26.3397	-79.3993	10.1
26.3254	-79.366	7.3
26.3111	-79.3327	7
26.2967	-79.2994	13.4
26.2824	-79.2661	23.5
26.268	-79.2328	37.6
26.2536	-79.1996	31.9
26.2391	-79.1664	28.3
26.2247	-79.1332	31.3
26.2103	-79.1	40.6
26.1958	-79.0668	29.8
26.1813	-79.0337	31.8
26.1668	-79.0005	36
26.1523	-78.9674	37.5
26.1378	-78.9343	33.4
26.1233	-78.9012	32.4
26.1087	-78.8682	36.9
26.0942	-78.8352	31.6
26.0796	-78.8021	45.9



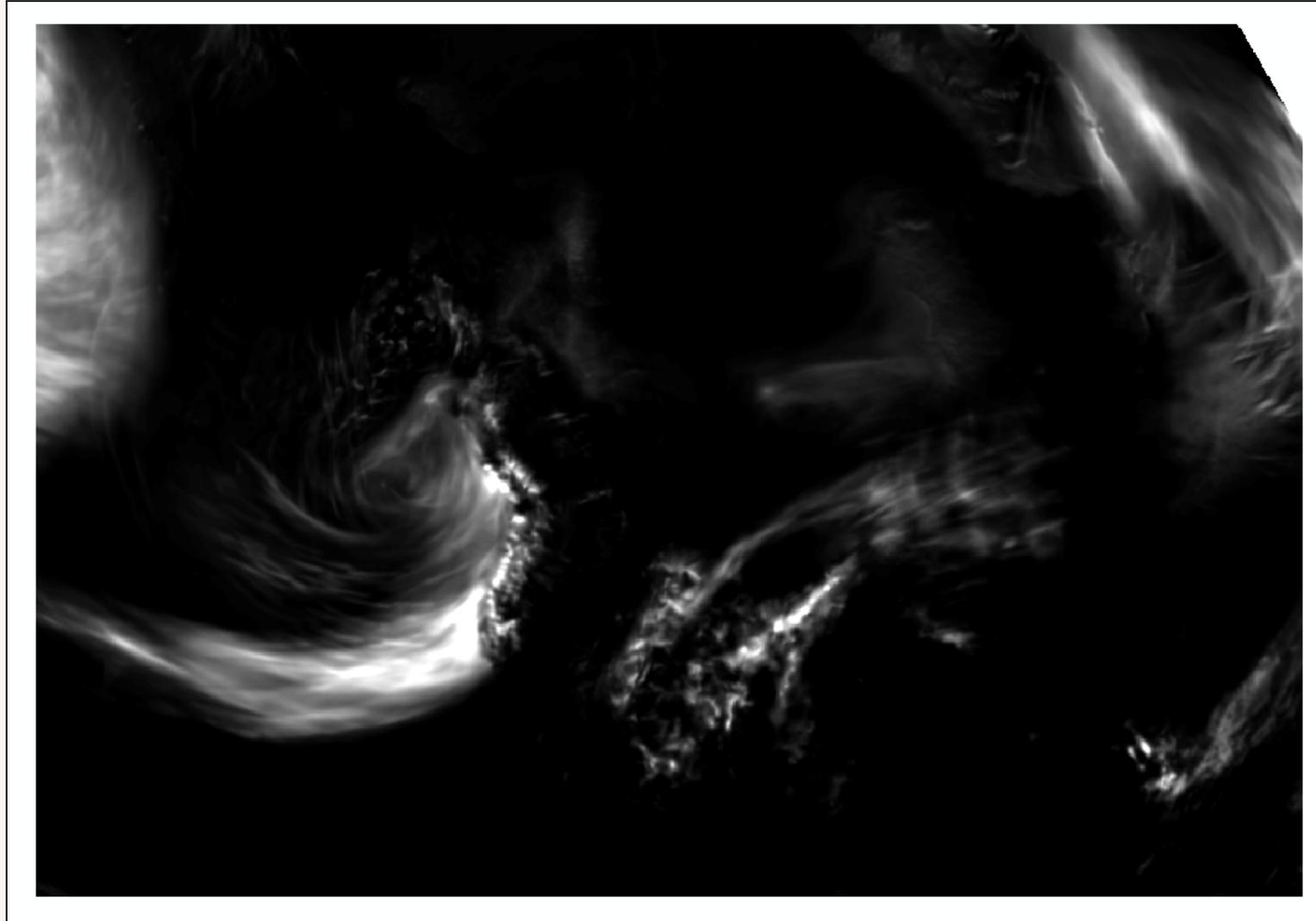
Bi-National Precipitation

<https://mrcc.illinois.edu/gismaps/naprecip.htm>

- Create Points (CaPA)



- Create Raster (CaPA)





Bi-National Precipitation

<https://mrcc.illinois.edu/gismaps/naprecip.htm>

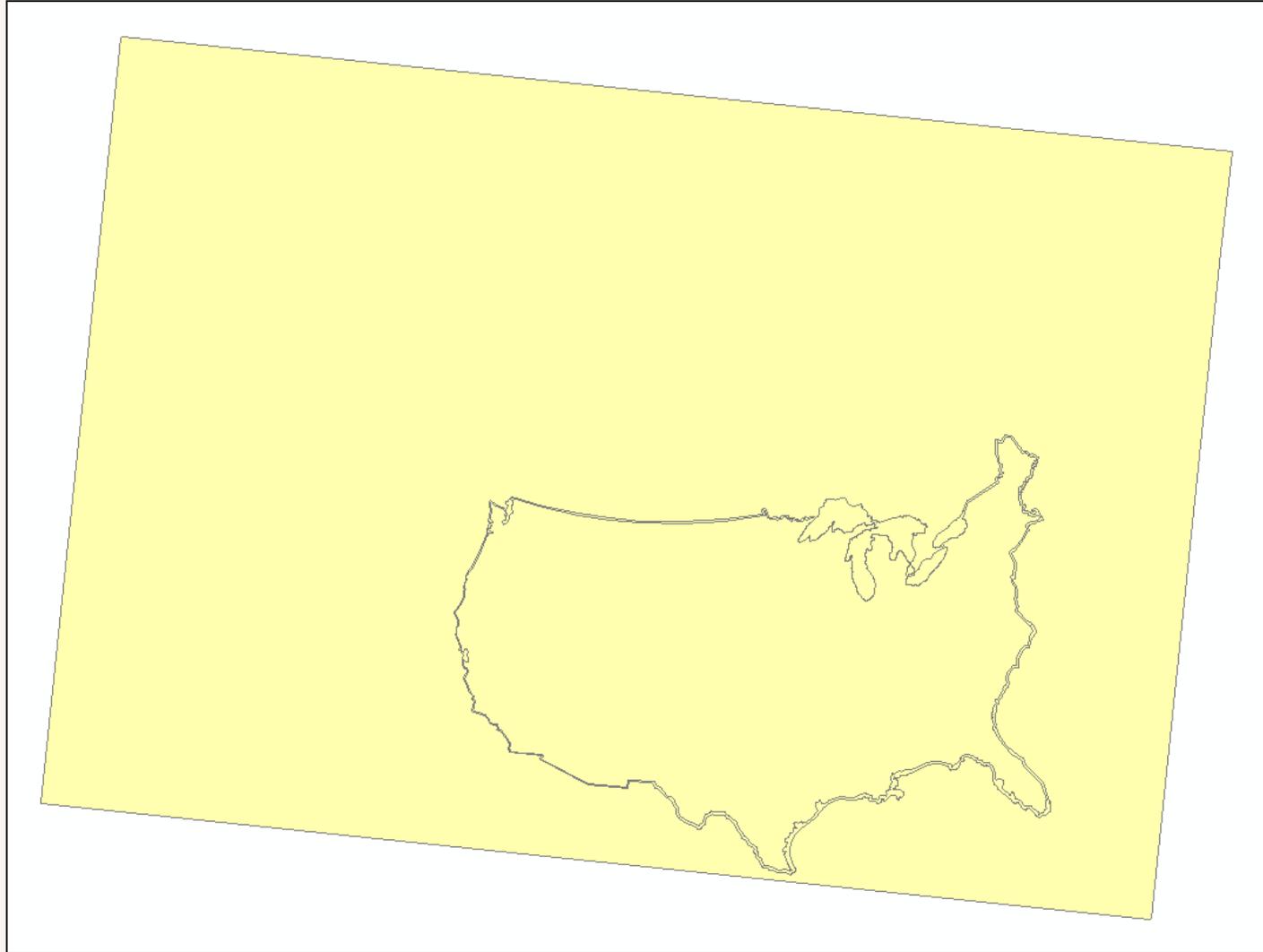
- Create Points (MPE)



- Create Raster (MPE)



- Create Merged Raster



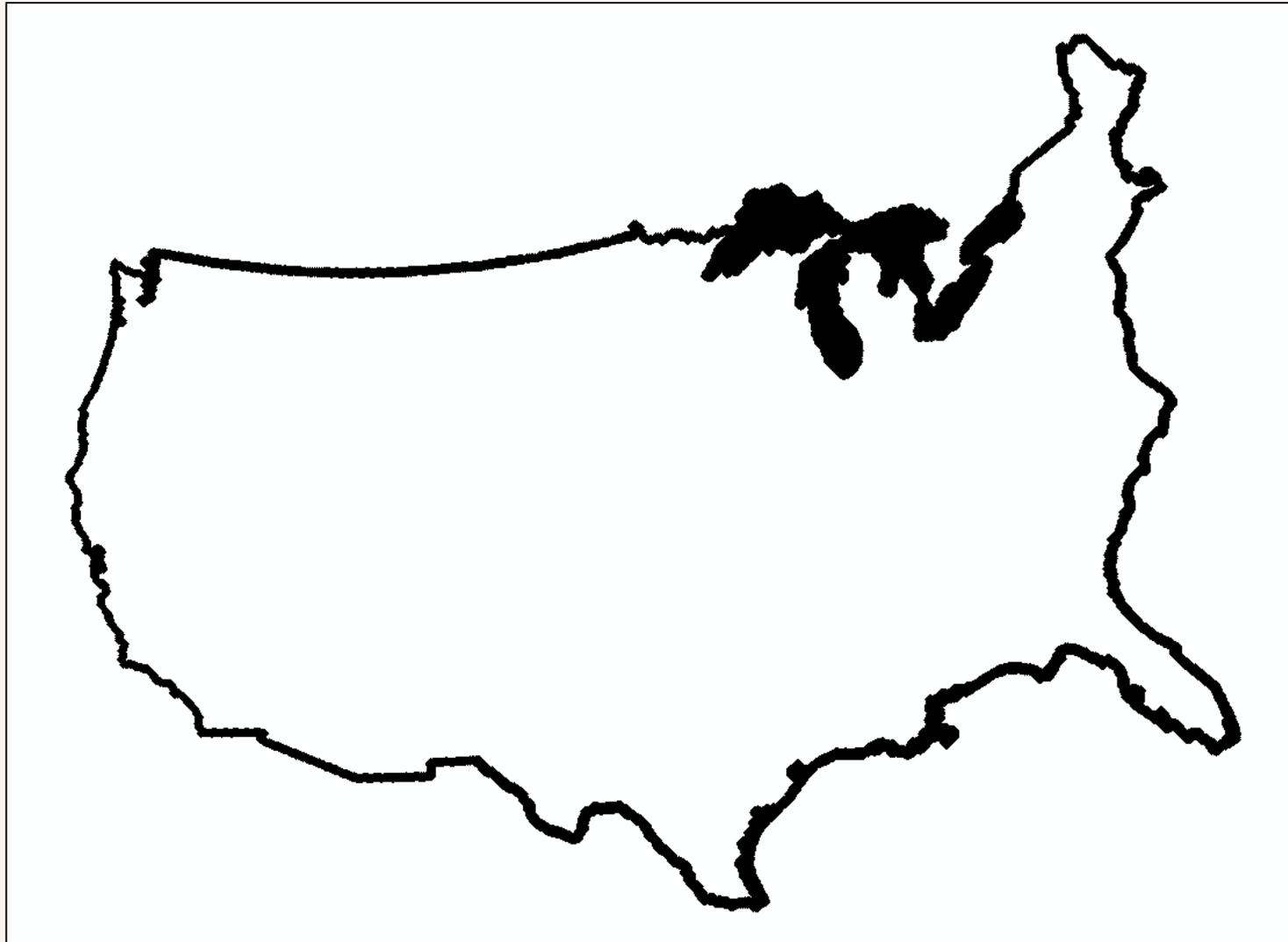
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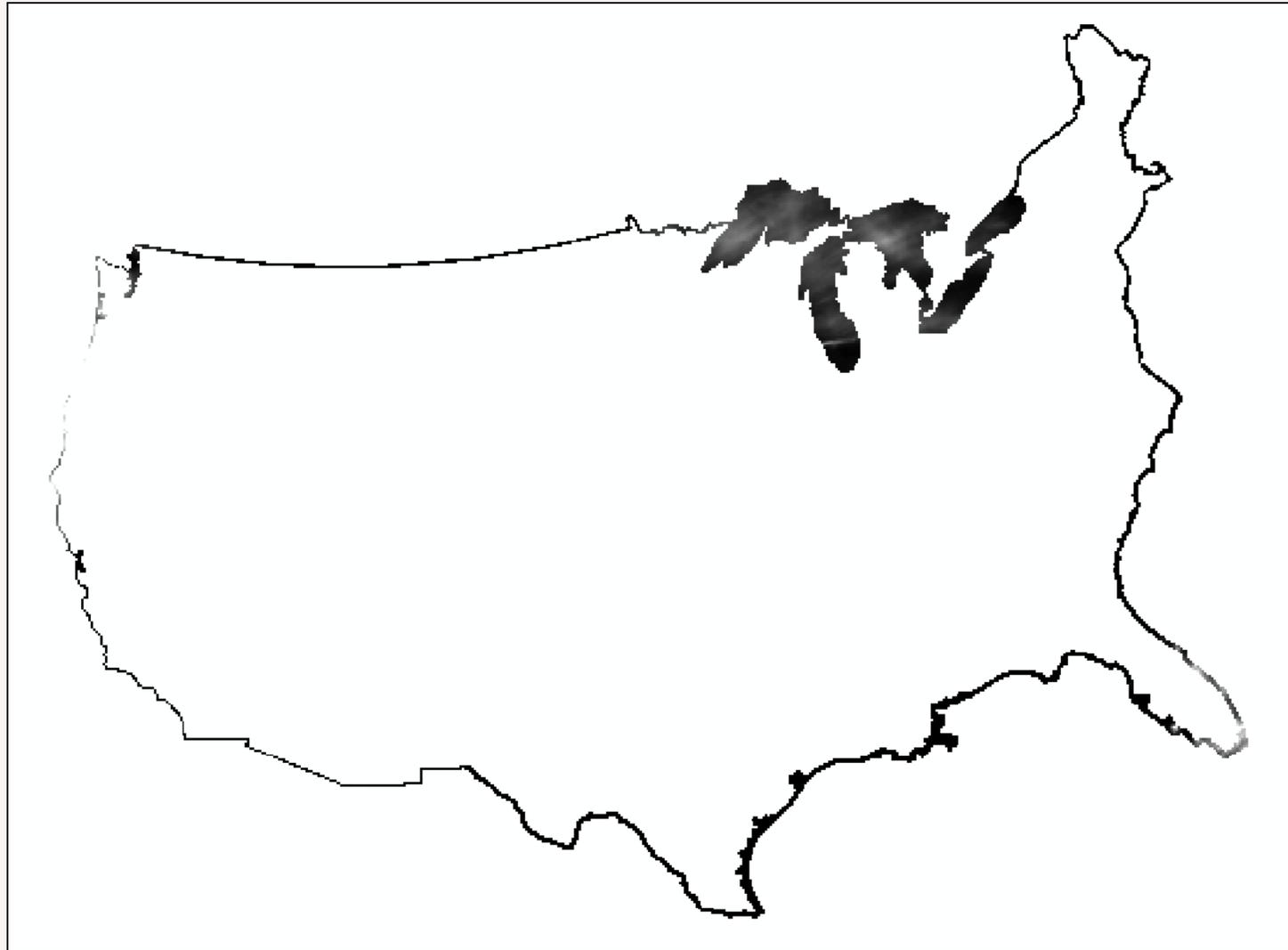
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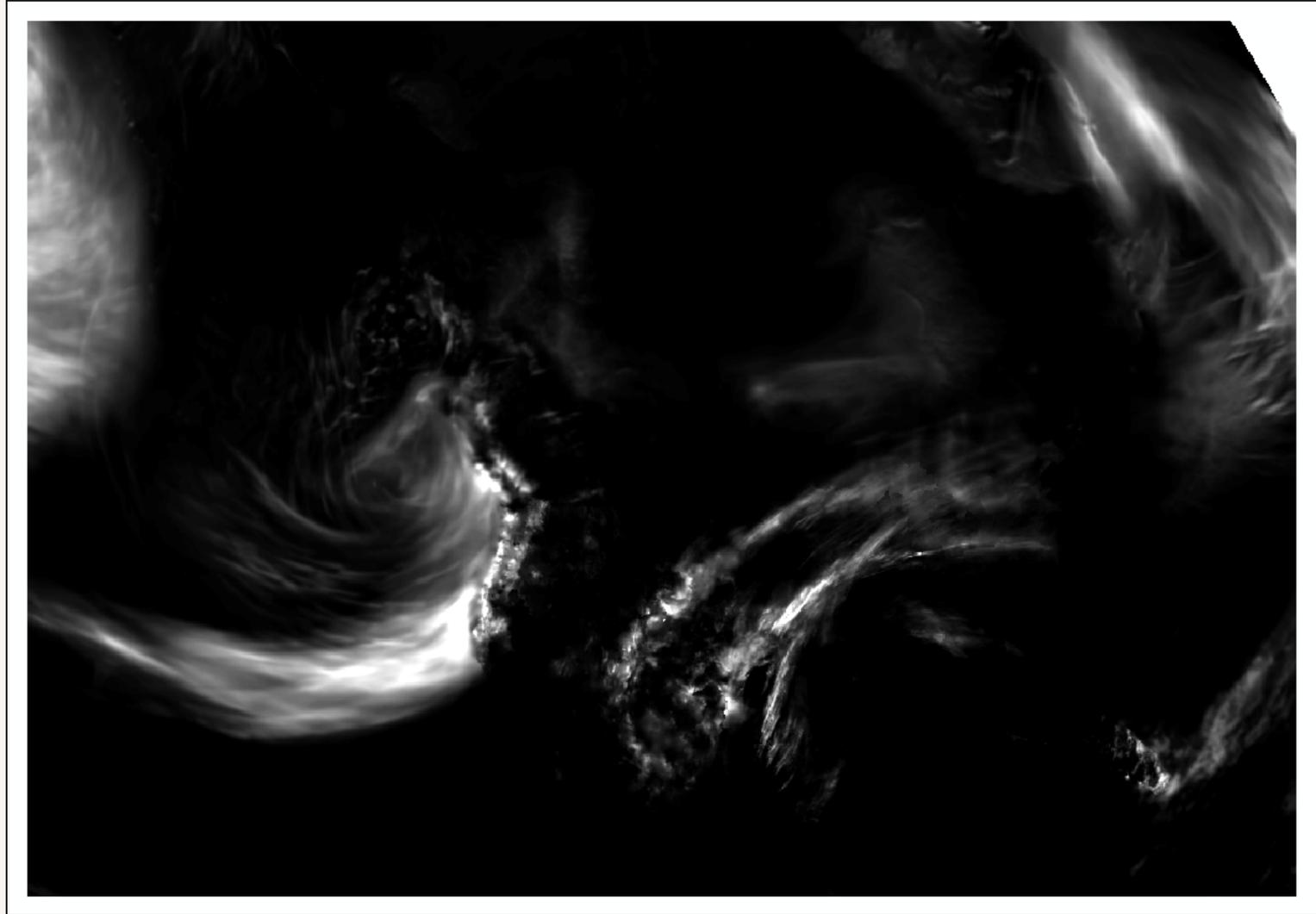
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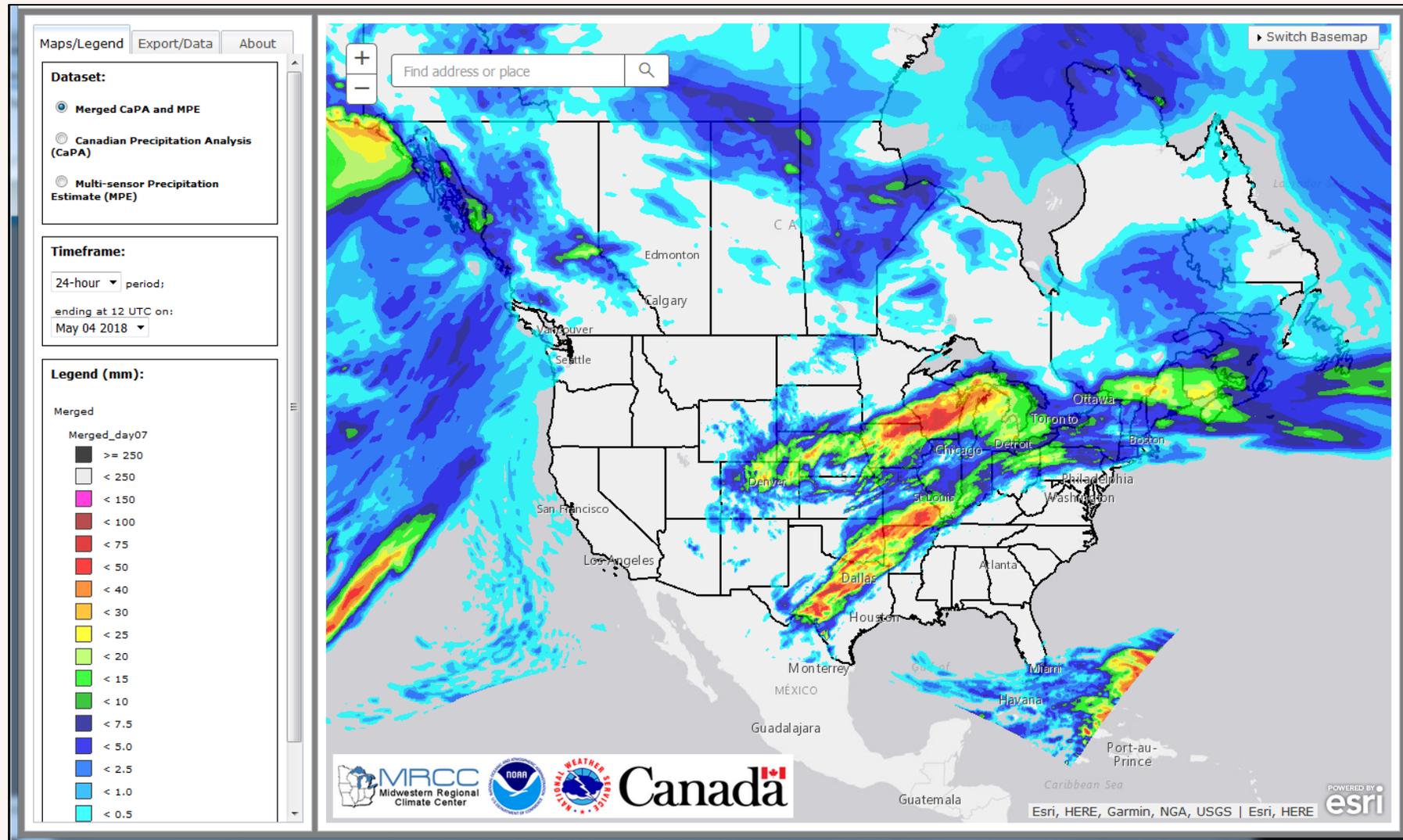
- Create Merged Raster



- Create Merged Raster

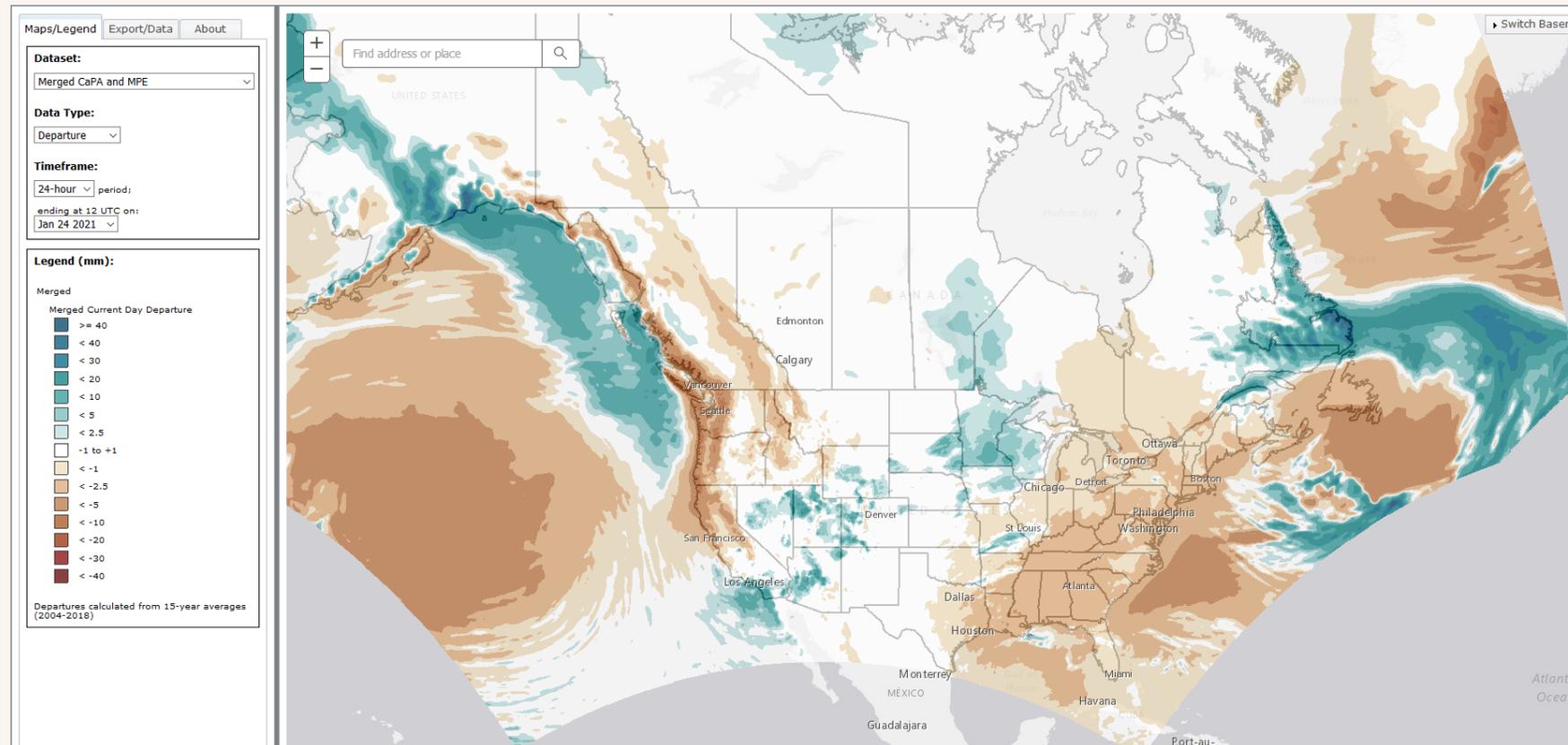


- Create Merged Web Map



Departures

- Daily 24-hr average precip. accumulations computed using averaging period of 2004-2018 for each data set (CaPA, MPE, Merged)
- Compute 24-hr, 30-, 60- and 90-day departures





Bi-National Precipitation

URL: <https://mrcc.illinois.edu/gismaps/naprecip.htm>

Thanks to Mike Timlin, Eileen Deremiah, Zoe Zaloudek, and Leslie Stoecker for assistance with getting up to speed on code and product.

Thank you for listening!

Quick Demonstration

Questions?