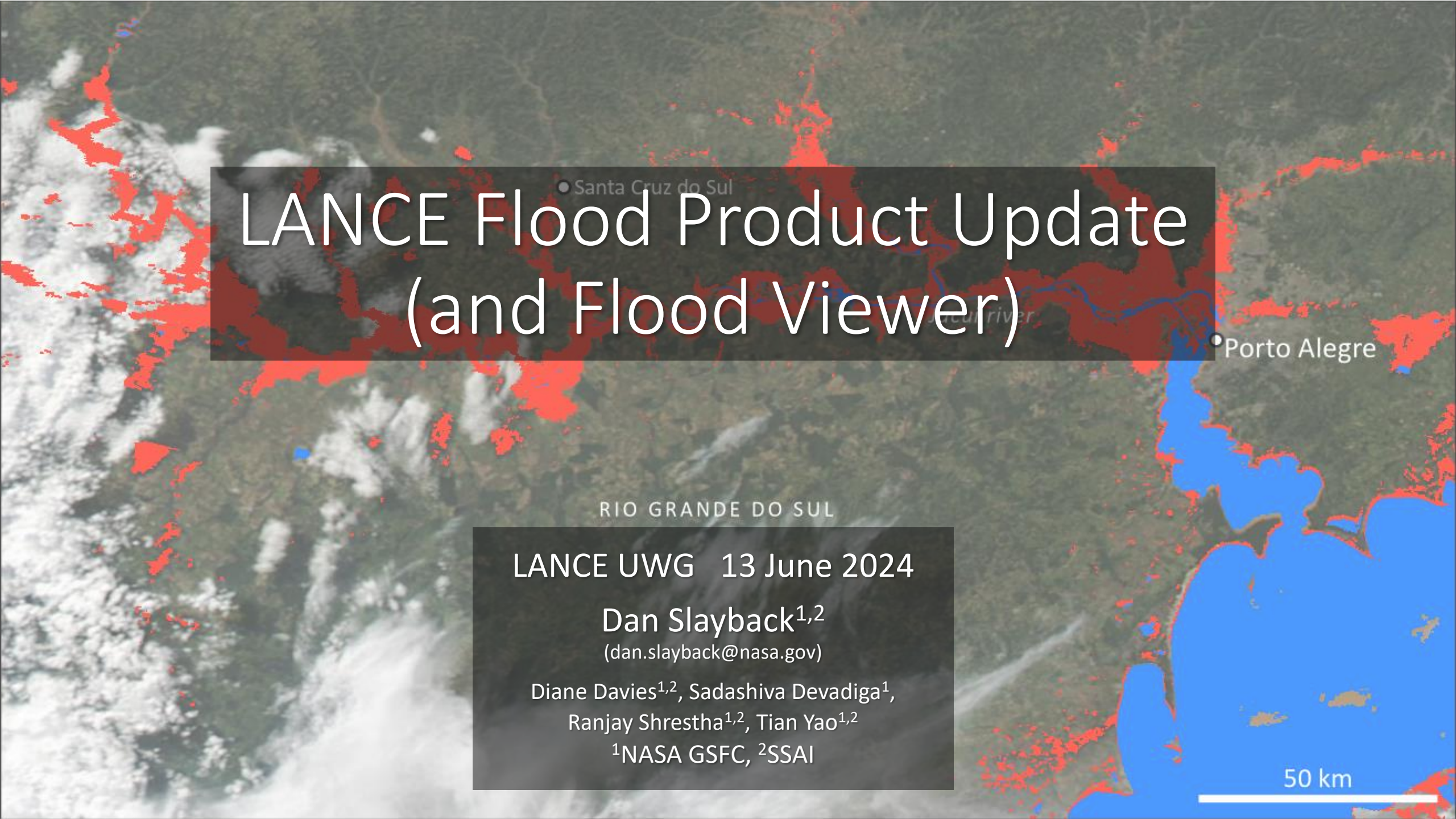



# LANCE Flood Product Update (and Flood Viewer)

LANCE UWG 13 June 2024

Dan Slayback[1,2]
(dan.slayback@nasa.gov)

Diane Davies[1,2], Sadashiva Devadiga[1], Ranjay Shrestha[1,2], Tian Yao[1,2]

[1]NASA GSFC, [2]SSAI

# Brazil flooding
# 6 May 2024

Santa Cruz do Sul

Jacui river

Porto Alegre

RIO GRANDE DO SUL

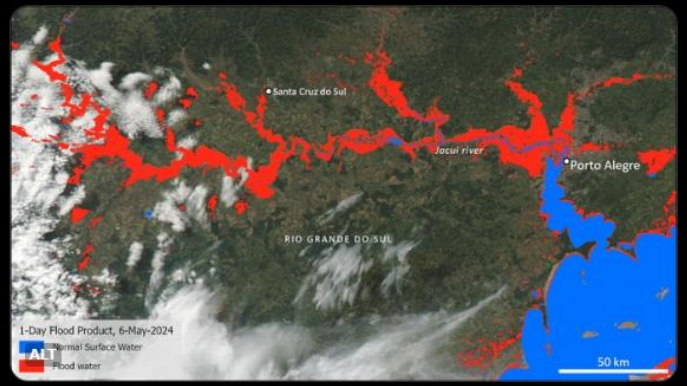
50 km

BRAZIL

**NASAEarthdata**
@NASAEarthData

NASA's Global Flood Product shows extensive flooding in Rio Grande do Sul, Brazil on May 6, after the devastating heavy rains in the region. The 1-day product is shown here, with #flooding in red, and normal surface water in blue.

Learn about the data: go.nasa.gov/3wteBxd

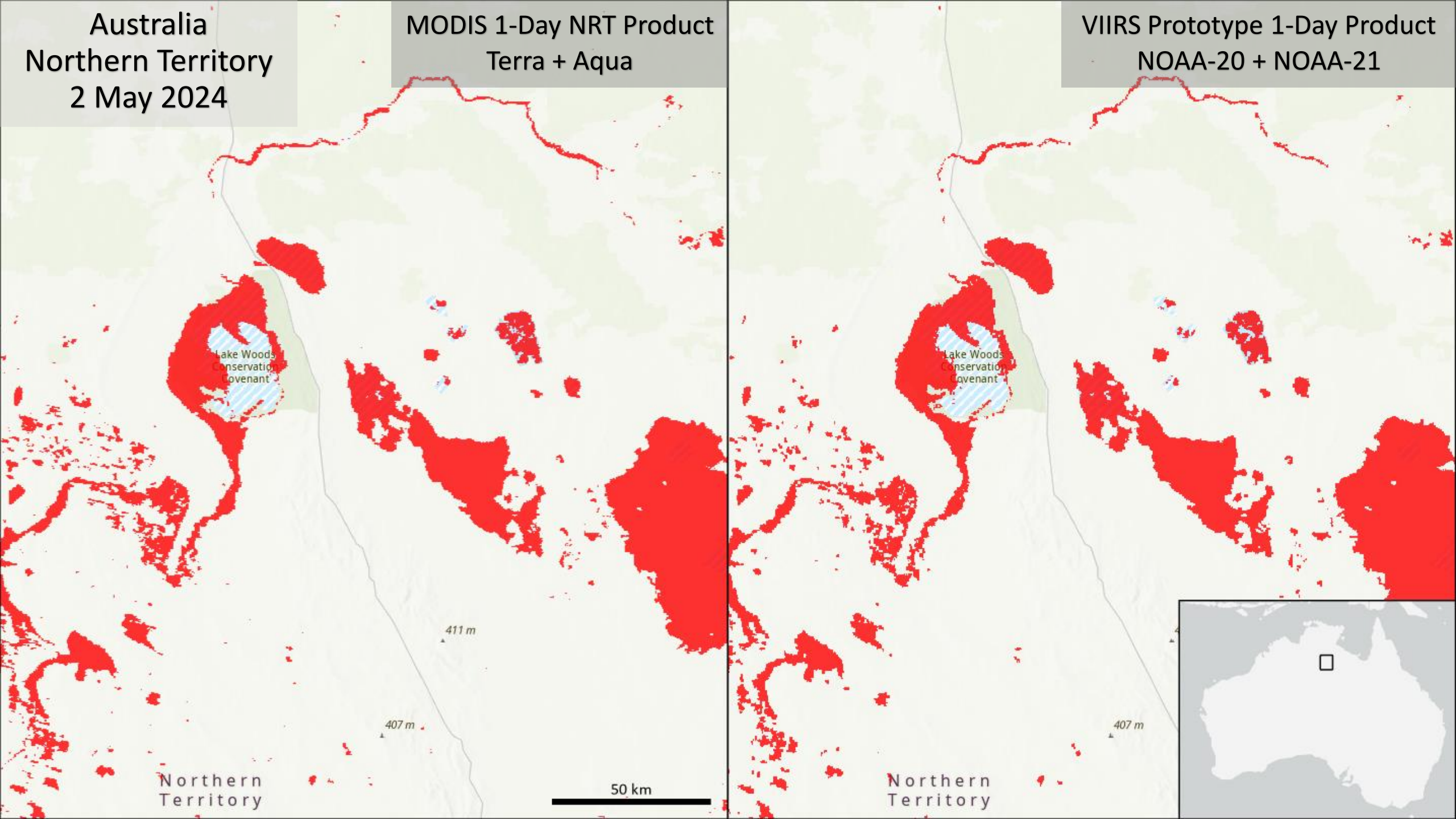


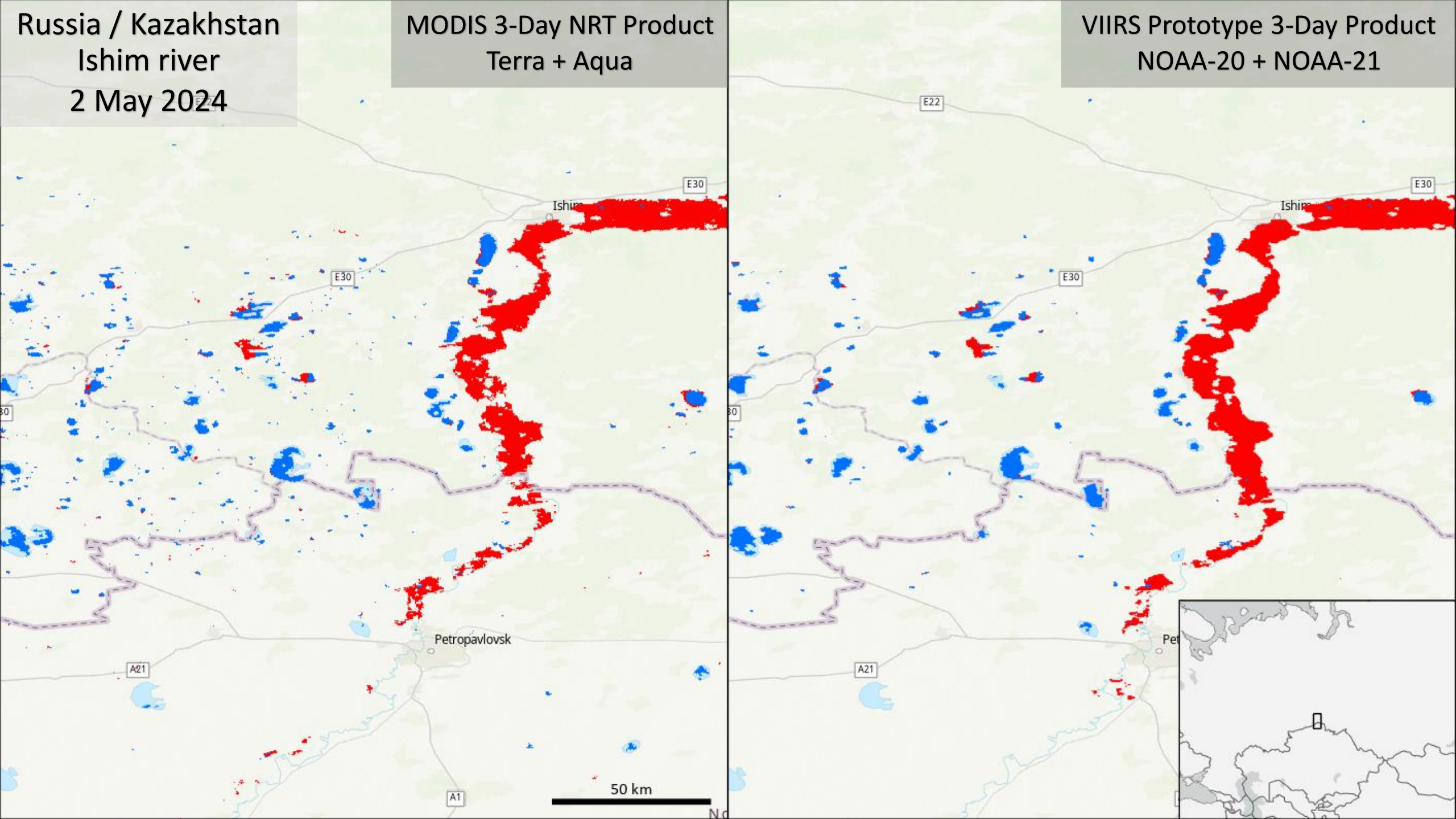

4:08 PM · May 7, 2024 · **60.2K** Views

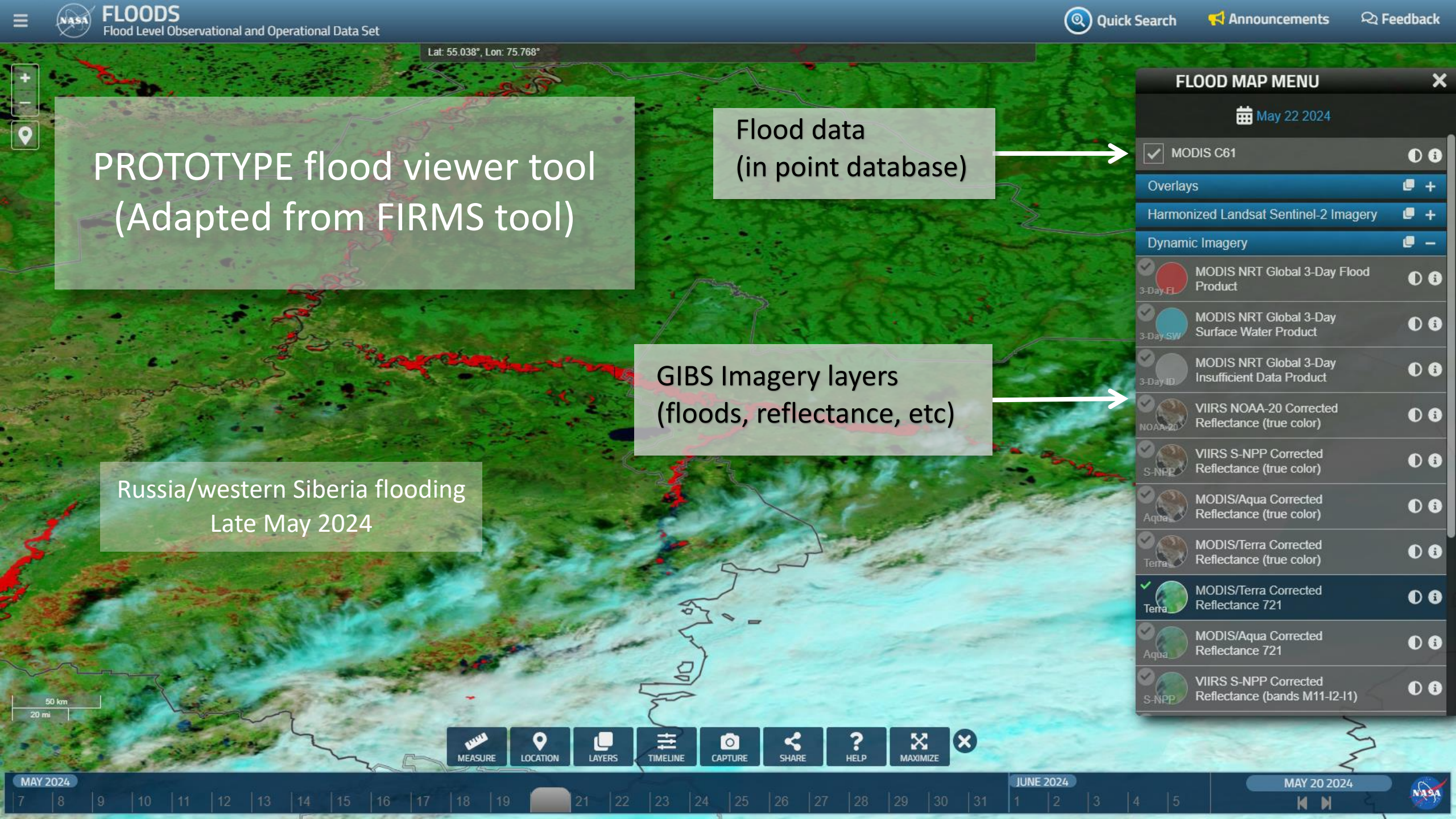
**195** Reposts **20** Quotes **484** Likes **62** Bookmarks

# Flood Product Updates:

- Product “Release 1” published April 2024, including:
  - Updated thresholding
    - Significant reduction in false-positives at high latitudes
  - Updated Reference Water mask
    - Switched from original MOD44W land/water mask (increasingly out of date), to the new yearly MOD44W product
    - Improves accuracy of flood vs surface water reporting in areas where new reservoirs have been constructed, or other changes to surface water distribution have occurred
  - Additional tiles added to production
    - Allows monitoring of lakes and flooding at high latitudes (from 70-80° N)
- VIIRS product
  - Science code is complete, only pending configuration of which VIIRS datastreams to include (among SNPP, NOAA-20, NOAA-21)
    - Currently evaluating combinations, and comparing to MODIS product
    - Results will be presented in a report / proposal to begin production of a VIIRS flood product
  - All PGE code modules have been deployed and tested
  - With approvals, potentially could release product by end of 2024


Australia
Northern Territory
2 May 2024
MODIS 1-Day NRT Product
Terra + Aqua
VIIRS Prototype 1-Day Product
NOAA-20 + NOAA-21
Lake Woods Conservation Covenant
411 m
407 m
Northern Territory
50 km
Lake Woods Conservation Covenant
407 m
Northern Territory

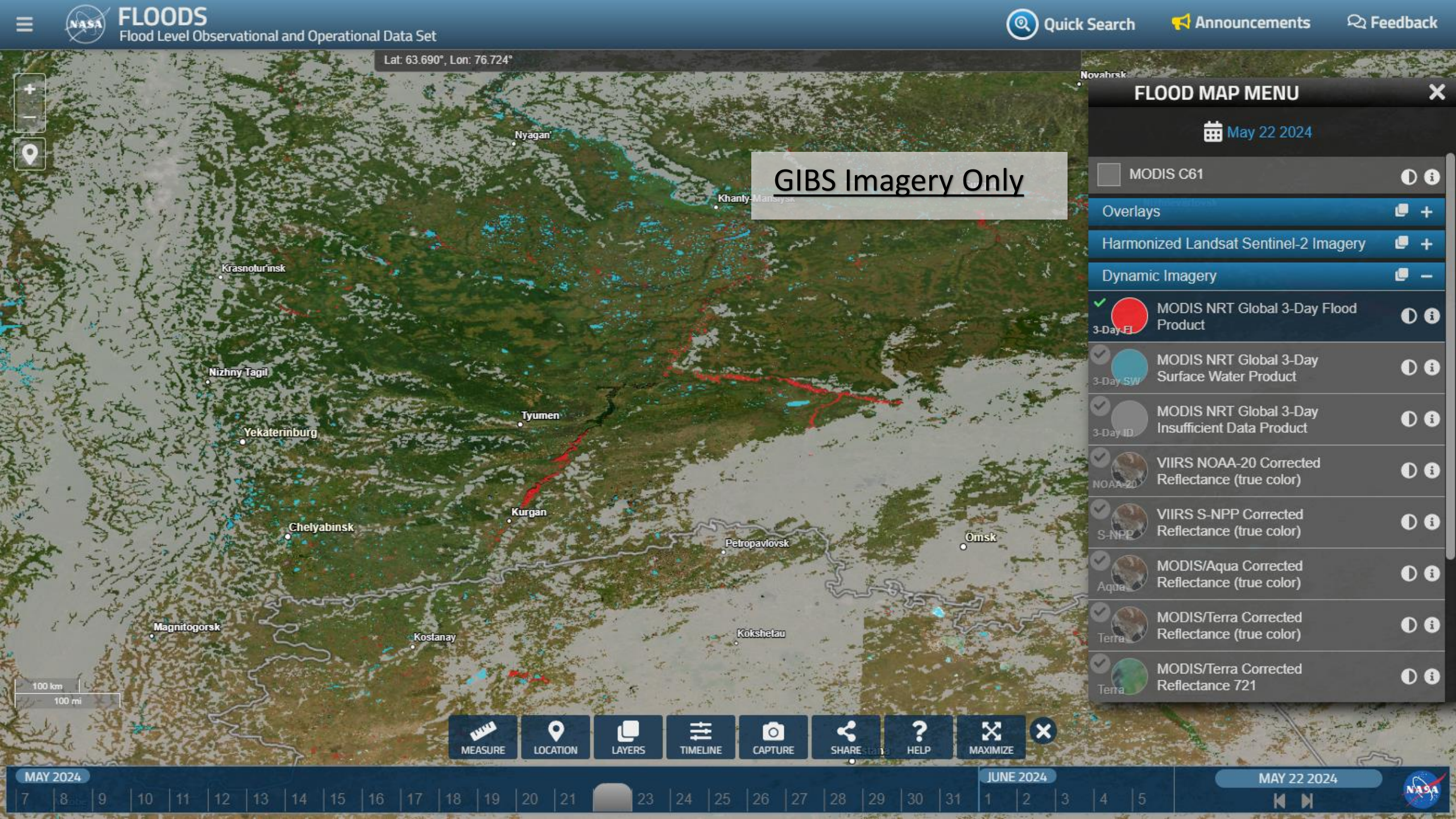

Russia / Kazakhstan
Ishim river
2 May 2024
MODIS 3-Day NRT Product
Terra + Aqua
VIIRS Prototype 3-Day Product
NOAA-20 + NOAA-21
E22
E30
Ishim
Petropavlovsk
A21
A1
50 km

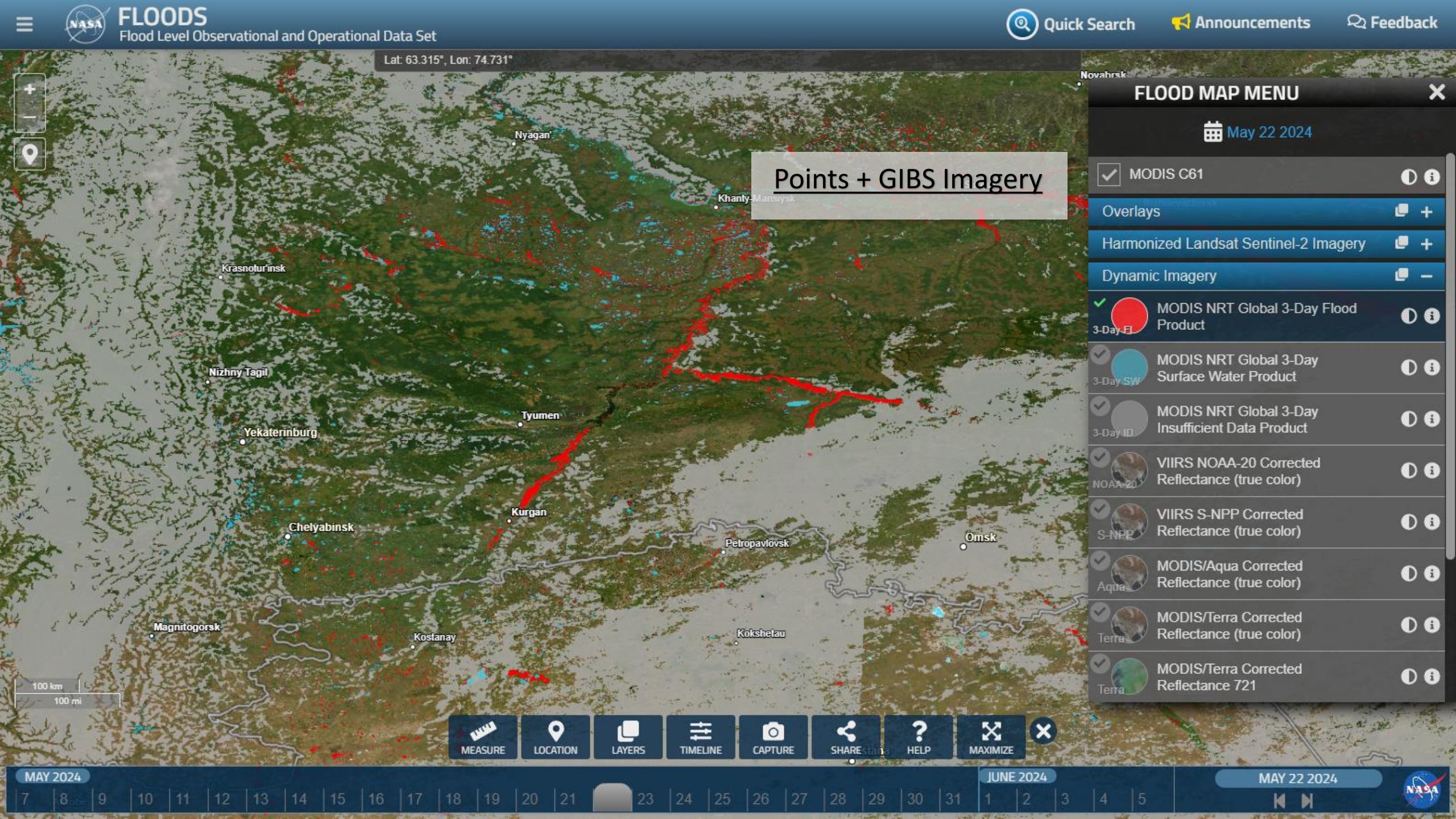

FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Lat: 55.038°, Lon: 75.768°
PROTOTYPE flood viewer tool
(Adapted from FIRMS tool)
Flood data
(in point database)
GIBS Imagery layers
(floods, reflectance, etc)
Russia/western Siberia flooding
Late May 2024
FLOOD MAP MENU
May 22 2024
MODIS C61
Overlays
Harmonized Landsat Sentinel-2 Imagery
Dynamic Imagery
MODIS NRT Global 3-Day Flood Product
MODIS NRT Global 3-Day Surface Water Product
MODIS NRT Global 3-Day Insufficient Data Product
VIIRS NOAA-20 Corrected Reflectance (true color)
VIIRS S-NPP Corrected Reflectance (true color)
MODIS/Aqua Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance 721
MODIS/Aqua Corrected Reflectance 721
VIIRS S-NPP Corrected Reflectance (bands M11-I2-I1)
50 km
20 mi
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 20 2024

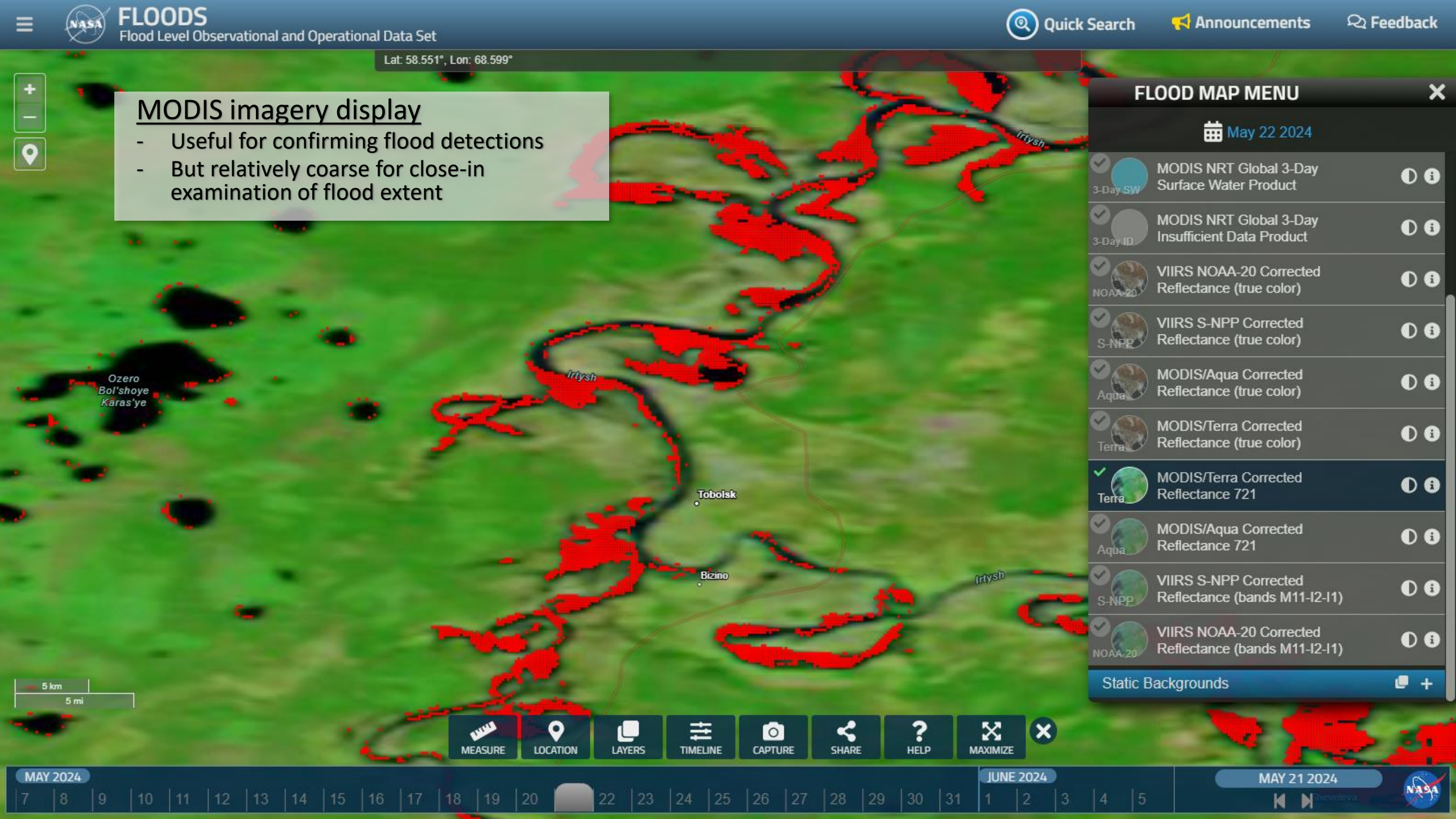

FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Global Zoom:
With GIBS imagery, only large floods are visible (if looking closely for red pixels)
FLOOD MAP MENU
May 22 2024
MODIS C61
Overlays
Harmonized Landsat Sentinel-2 Imagery
Dynamic Imagery
MODIS NRT Global 3-Day Flood Product
MODIS NRT Global 3-Day Surface Water Product
MODIS NRT Global 3-Day Insufficient Data Product
VIIRS NOAA-20 Corrected Reflectance (true color)
VIIRS S-NPP Corrected Reflectance (true color)
MODIS/Aqua Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance 721
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 22 2024
Lat: 71.967°, Lon: 90.22
SVALBARD
Greenland Sea
Barents Sea
RUSSIA
Arctic Ocean
NORWAY
Stockholm
Moscow
UNITED KINGDOM
Warsaw
Paris
UKRAINE
KAZAKHSTAN
MONGOLIA
Sea of Okhotsk
Milan
ITALY
Madrid
Istanbul
GREECE
TÜRKIYE
Beijing
Tokyo
Baghdad
CHINA
Shanghai
North Atlantic Ocean
Cairo
New Delhi
ALGERIA
LIBYA
EGYPT
SAUDI ARABIA
Dubai
INDIA
MYANMAR (BURMA)
Hong Kong
Mumbai
MALI
NIGER
CHAD
SUDAN
Arabian Sea
Bangkok
NIGERIA
Accra
ETHIOPIA
Singapore
DR CONGO
TANZANIA
Jakarta
INDONESIA
ANGOLA
ZAMBIA
NAMIBIA
Indian Ocean
AUSTRALIA
Johannesburg
SOUTH AFRICA
South Atlantic Ocean
2000 km
1000 mi


FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Lat: 65.530°, Lon: 157.358°
Continental Zoom:
Better, but only largest floods noticeable
FLOOD MAP MENU
May 22 2024
MODIS C61
Overlays
Harmonized Landsat Sentinel-2 Imagery
Dynamic Imagery
MODIS NRT Global 3-Day Flood Product
MODIS NRT Global 3-Day Surface Water Product
MODIS NRT Global 3-Day Insufficient Data Product
VIIRS NOAA-20 Corrected Reflectance (true color)
VIIRS S-NPP Corrected Reflectance (true color)
MODIS/Aqua Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance 721
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 22 2024
RUSSIA
KAZAKHSTAN
MONGOLIA
CHINA
IRAN
PAKISTAN
SAUDI ARABIA
OMAN
YEMEN
LAOS
VIETNAM
PHILIPPINES
Arabian Sea
Yekaterinburg
Novosibirsk
Astana
Volgograd
Urumqi
Shenyang
Beijing
Seoul
Tashkent
Baku
Tehran
Kabul
Islamabad
Lahore
Baghdad
Kuwait City
New Delhi
Xi'an
Wuhan
Shanghai
Chongqing
Taipei
Hong Kong
Hanoi
Dhaka
Karachi
Ahmedabad
Mumbai
Hyderabad
Yangon
Bangkok
Manila
Phnom Penh
Chennai
Djibouti
Colombo
Mogadishu
Riyadh
Dubai


FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Lat: 64.954°, Lon: 146.162°
Add point database display:
Flood pixels are over-represented, making even small areas of reported flood obvious
FLOOD MAP MENU
May 22 2024
MODIS C61
Overlays
Harmonized Landsat Sentinel-2 Imagery
Dynamic Imagery
MODIS NRT Global 3-Day Flood Product
MODIS NRT Global 3-Day Surface Water Product
MODIS NRT Global 3-Day Insufficient Data Product
VIIRS NOAA-20 Corrected Reflectance (true color)
VIIRS S-NPP Corrected Reflectance (true color)
MODIS/Aqua Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance 721
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 22 2024
RUSSIA
KAZAKHSTAN
MONGOLIA
CHINA
IRAN
PAKISTAN
SAUDI ARABIA
OMAN
YEMEN
LAOS
VIETNAM
PHILIPPINES
Arabian Sea
Yekaterinburg
Novosibirsk
Astana
Volgograd
Urumqi
Shenyang
Beijing
Seoul
Tashkent
Baku
Tehran
Kabul
Islamabad
Lahore
Baghdad
Kuwait City
New Delhi
Karachi
Dubai
Riyadh
Ahmedabad
Dhaka
Taipei
Hong Kong
Hanoi
Mumbai
Hyderabad
Yangon
Bangkok
Manila
Chennai
Phnom Penh
Djibouti
Colombo
Mogadishu


FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Lat: 63.690°, Lon: 76.724°
GIBS Imagery Only
FLOOD MAP MENU
May 22 2024
MODIS C61
Overlays
Harmonized Landsat Sentinel-2 Imagery
Dynamic Imagery
MODIS NRT Global 3-Day Flood Product
MODIS NRT Global 3-Day Surface Water Product
MODIS NRT Global 3-Day Insufficient Data Product
VIIRS NOAA-20 Corrected Reflectance (true color)
VIIRS S-NPP Corrected Reflectance (true color)
MODIS/Aqua Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance 721
Nyagan'
Khanty-Mansiysk
Krasnotur'insk
Nizhny Tagil
Tyumen
Yekaterinburg
Kurgan
Chelyabinsk
Petropavlovsk
Omsk
Magnitogorsk
Kostanay
Kokshetau
100 km
100 mi
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 22 2024


FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Lat: 63.315°, Lon: 74.731°
Points + GIBS Imagery
FLOOD MAP MENU
May 22 2024
MODIS C61
Overlays
Harmonized Landsat Sentinel-2 Imagery
Dynamic Imagery
MODIS NRT Global 3-Day Flood Product
MODIS NRT Global 3-Day Surface Water Product
MODIS NRT Global 3-Day Insufficient Data Product
VIIRS NOAA-20 Corrected Reflectance (true color)
VIIRS S-NPP Corrected Reflectance (true color)
MODIS/Aqua Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance 721
Nyagan'
Khanty-Mansiysk
Krasnotur'insk
Nizhny Tagil
Yekaterinburg
Tyumen
Kurgan
Chelyabinsk
Petropavlovsk
Omsk
Magnitogorsk
Kostanay
Kokshetau
100 km
100 mi
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 22 2024

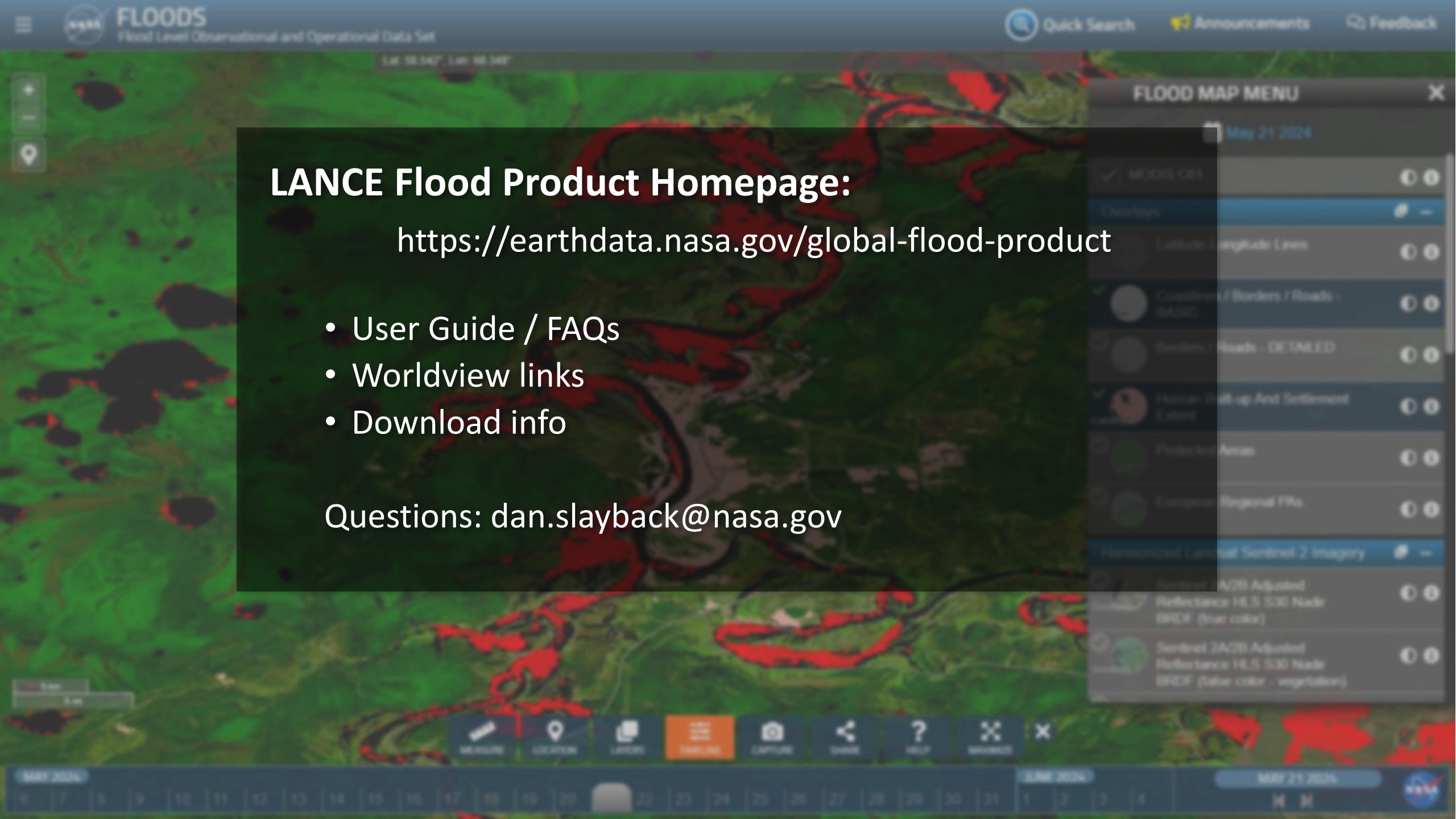

FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Lat: 58.551°, Lon: 68.599°
MODIS imagery display
- Useful for confirming flood detections
- But relatively coarse for close-in examination of flood extent
FLOOD MAP MENU
May 22 2024
MODIS NRT Global 3-Day Surface Water Product
MODIS NRT Global 3-Day Insufficient Data Product
VIIRS NOAA-20 Corrected Reflectance (true color)
VIIRS S-NPP Corrected Reflectance (true color)
MODIS/Aqua Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance (true color)
MODIS/Terra Corrected Reflectance 721
MODIS/Aqua Corrected Reflectance 721
VIIRS S-NPP Corrected Reflectance (bands M11-I2-I1)
VIIRS NOAA-20 Corrected Reflectance (bands M11-I2-I1)
Static Backgrounds
Ozero Bol'shoye Karas'ye
Irtysh
Tobolsk
Bizino
5 km
5 mi
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 21 2024


FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Lat: 58.555°, Lon: 68.588°
Adding Landsat, or Sentinel-2 (when available)
- Much more detail visible on relation of detected flood to local features.
FLOOD MAP MENU
May 22 2024
MODIS C61
Overlays
Harmonized Landsat Sentinel-2 Imagery
Sentinel 2A/2B Adjusted Reflectance HLS S30 Nadir BRDF (true color)
Sentinel 2A/2B Adjusted Reflectance HLS S30 Nadir BRDF (false color - vegetation)
Landsat 8/9 Adjusted Reflectance HLS S30 Nadir BRDF (true color)
Landsat 8/9 Adjusted Reflectance HLS S30 Nadir BRDF (false color - vegetation)
Dynamic Imagery
MODIS NRT Global 3-Day Flood Product
MODIS NRT Global 3-Day Surface Water Product
MODIS NRT Global 3-Day Insufficient Data Product
Irtysh
Ozero Bol'shoye Karas'ye
Tobolsk
Bizino
5 km
5 mi
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 21 2024


FLOODS
Flood Level Observational and Operational Data Set
Quick Search
Announcements
Feedback
Lat: 58.542°, Lon: 68.348°
FLOOD MAP MENU
May 21 2024
MODIS C61
Overlays
Latitude-Longitude Lines
Coastlines / Borders / Roads - BASIC
Borders / Roads - DETAILED
Human Built-up And Settlement Extent
Protected Areas
European Regional PAs
Harmonized Landsat Sentinel-2 Imagery
Sentinel 2A/2B Adjusted Reflectance HLS S30 Nadir BRDF (true color)
Sentinel 2A/2B Adjusted Reflectance HLS S30 Nadir BRDF (false color - vegetation)
Additional overlays configurable
5 km
5 mi
MEASURE
LOCATION
LAYERS
TIMELINE
CAPTURE
SHARE
HELP
MAXIMIZE
MAY 2024
JUNE 2024
MAY 21 2024

# Flood viewer tool prototype

- Adapted from FIRMS viewer
  - Flood data loaded as points into point database
- Unique Capabilities:
  - Visually highlights floods (due to point nature of database)
  - Facilitates product QA/QC
  - Landsat/Sentinel-2 available for overlay, aiding evaluation
  - Potential to feed flood alert systems
- If fully supported and deployed publicly, has potential to fill a gap for more advanced users
  - Add access to 1-day product
  - Add additional flood products (NOAA, Copernicus, etc)
  - Add additional relevant layers (historical events or summaries, etc)




## LANCE Flood Product Homepage:

https://earthdata.nasa.gov/global-flood-product

- User Guide / FAQs
- Worldview links
- Download info

Questions: dan.slayback@nasa.gov