

6th Workshop on Water Resources in Developing Countries: Hydroclimate Modeling, Information Tools and Simulation Techniques May 20-31, 2024

UC-Irvine CHRS's global satellite precipitation products and tools



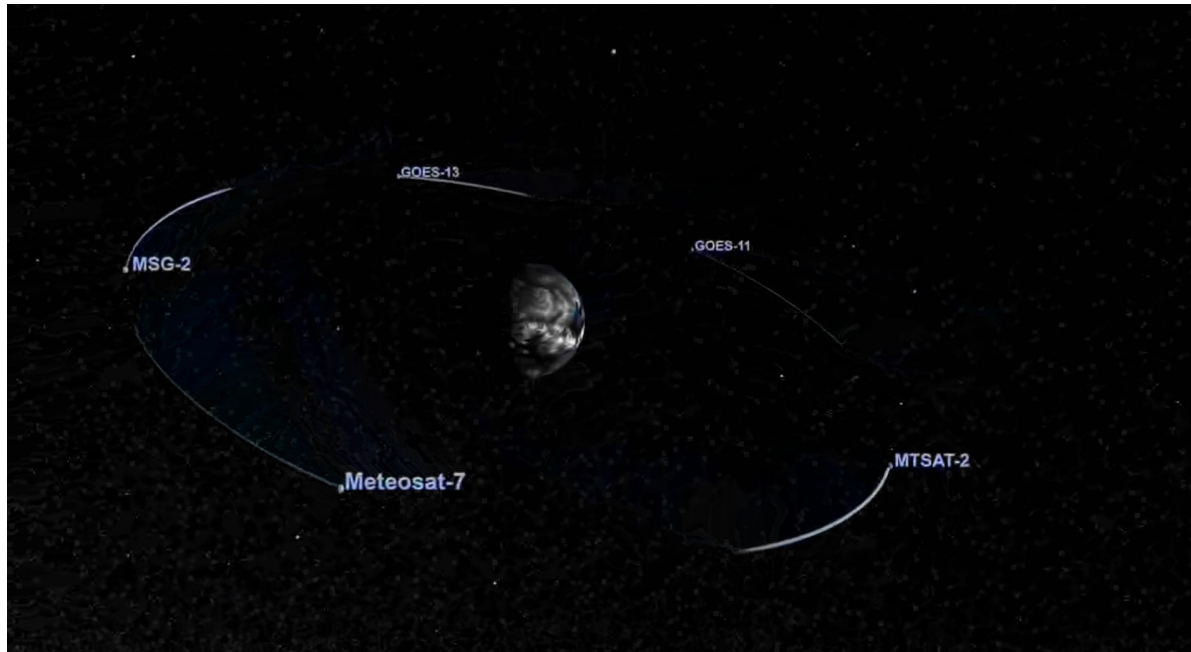
Phu Nguyen, Soroosh Sorooshian, Kuolin Hsu, Dan Braithwaite

Sponsors

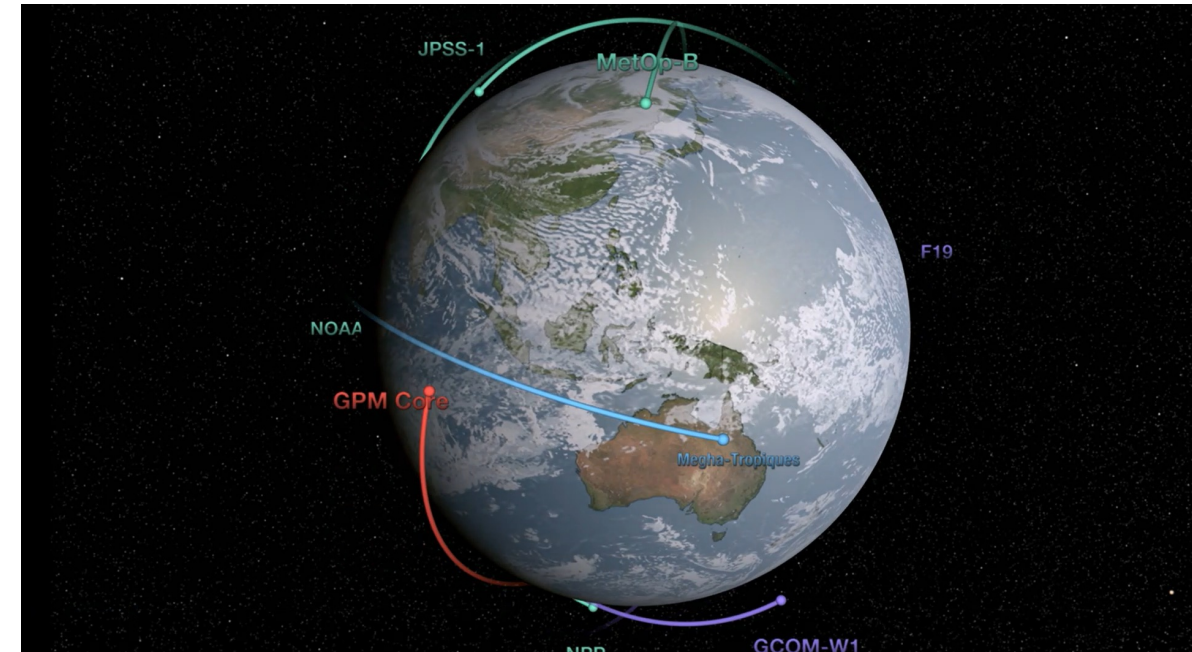


Satellite Precipitation Observation

Geo Satellites

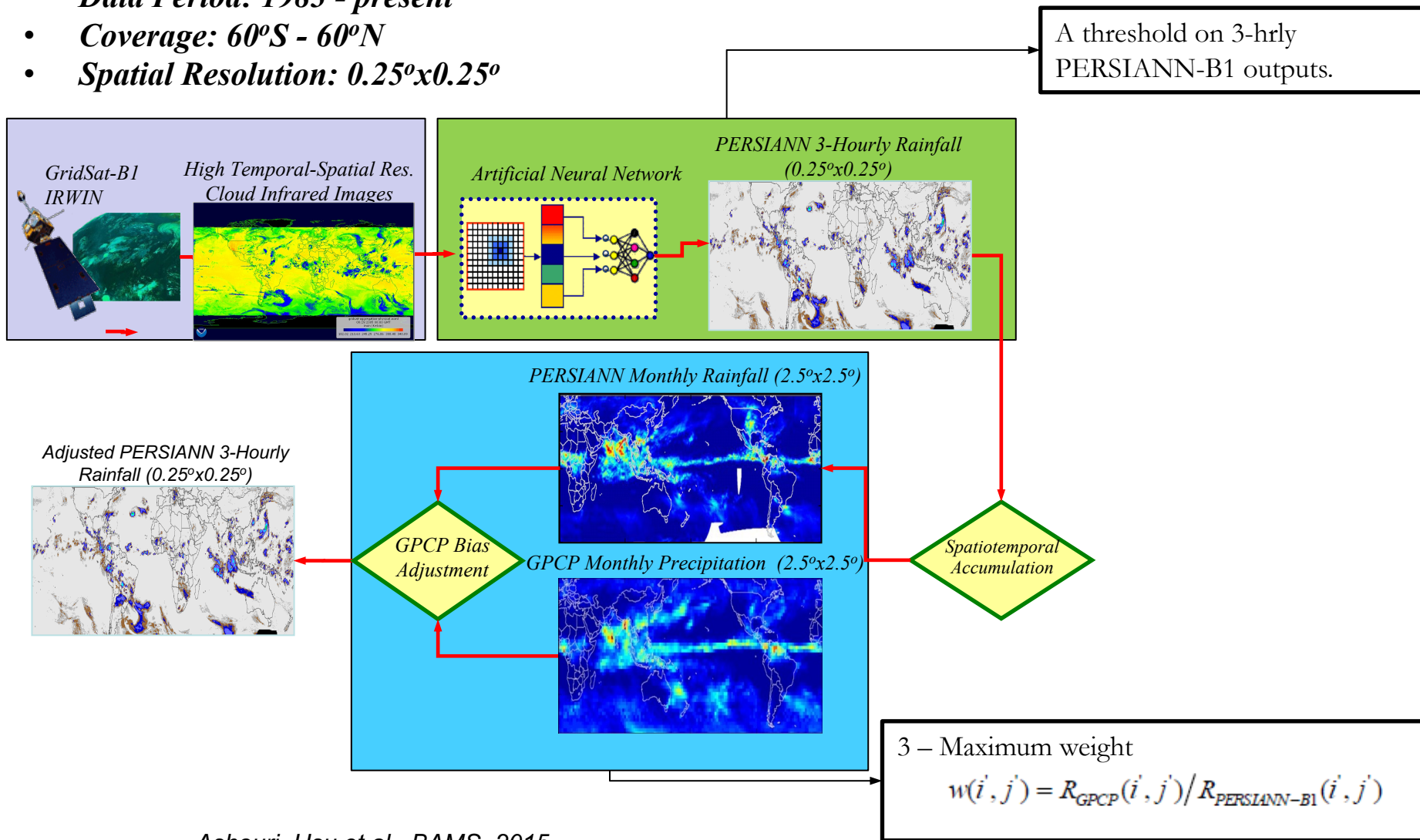


LEO Satellites



PERSIANN-CDR

- **Daily Precipitation Data**
- **Data Period: 1983 - present**
- **Coverage: 60°S - 60°N**
- **Spatial Resolution: 0.25°x0.25°**



Ashouri, Hsu et al., BAMS, 2015

PERSIANN-CDR Dataset

NOAA NATIONAL CENTERS FOR ENVIRONMENTAL INFORMATION
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
Formerly the National Climatic Data Center (NCDC)... [more about NCEP](#)

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Home > Climate Data Record Program > Atmospheric > Precipitation - PERSIANN-CDR

Precipitation - PERSIANN-CDR

This dataset provides a high quality Climate Data Record (CDR) of Precipitation.

This global precipitation dataset is intended to support Climatologists, Hydrologists, Hydrometeorologists, and Hydroclimatologists in various forms of climate research, including extreme event (flood and drought) analysis.

Principal Investigator: Soroosh Sorooshian, University of California - Irvine

Cite dataset when used as a source. See the dataset's DOI landing page for citation details at [doi:10.7289/V51V5BWQ](https://doi.org/10.7289/V51V5BWQ)

Index of /cdr/persiann/files/

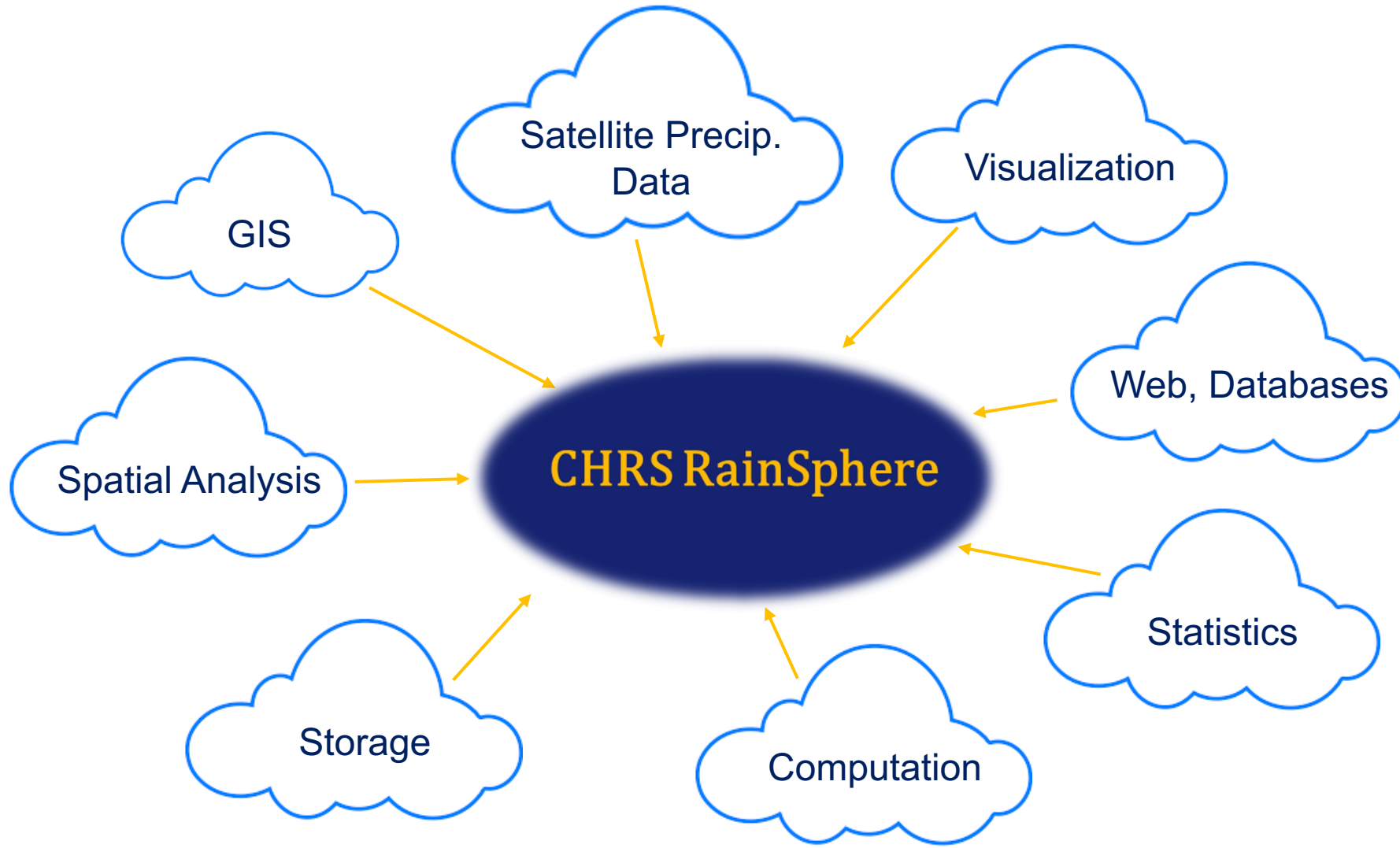
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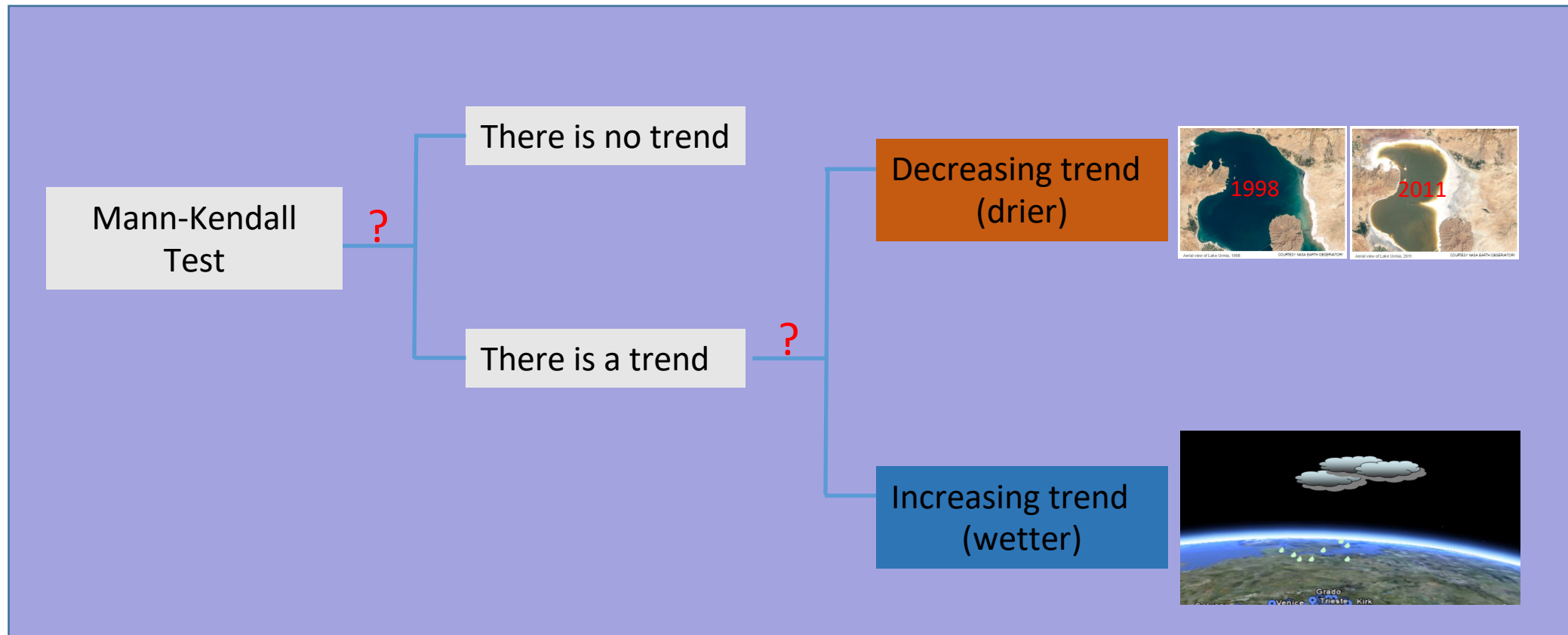
Methods



Rain Trend Analysis

Mann-Kendall Test

We test the null hypothesis H_0 that there is no significant trend in the data at significance level $\alpha=0.05$ (or 95% confidence level)



RainSphere Interface

<http://rainsphere.eng.uci.edu>

The screenshot displays the CHRS RainSphere web interface. At the top left is the CHRS logo with the text "CHRS RainSphere" and "An Integrated System for Global Satellite Precipitation Data and Information". A navigation menu includes "Home", "Info", "Tutorial", and "About Us". The current coordinates are "Lat: 40.313, Lon: -114.609". A search bar labeled "Search Location" is positioned above the map. The map itself shows a global view of satellite precipitation data, with a "Satellite" dropdown menu in the top right corner. On the left side, there are several control panels: "Map Layers" with checkboxes for "Country", "Pol. Division", "Cont. Basin", "Major River", "Tributary", and "Watershed"; "Rain Information" with radio buttons for "Historical Satellite Observation" and "Future IPCC Projection"; "Rain Layers" with radio buttons for "Accumulative", "Yearly", "Average", and "Monthly"; "Rain Layers Comparison" with a "Side by Side" dropdown and a "Compare" button; and "Rain Statistics" with "Query By: Location" and "Date Type: Select Type" dropdowns. A small inset map in the bottom left corner shows a zoomed-in view of the selected area. The bottom of the interface features a "Google" logo, a copyright notice "Copyright © 2015 CHRS, UC Irvine. All rights reserved.", and a scale bar "500 km".



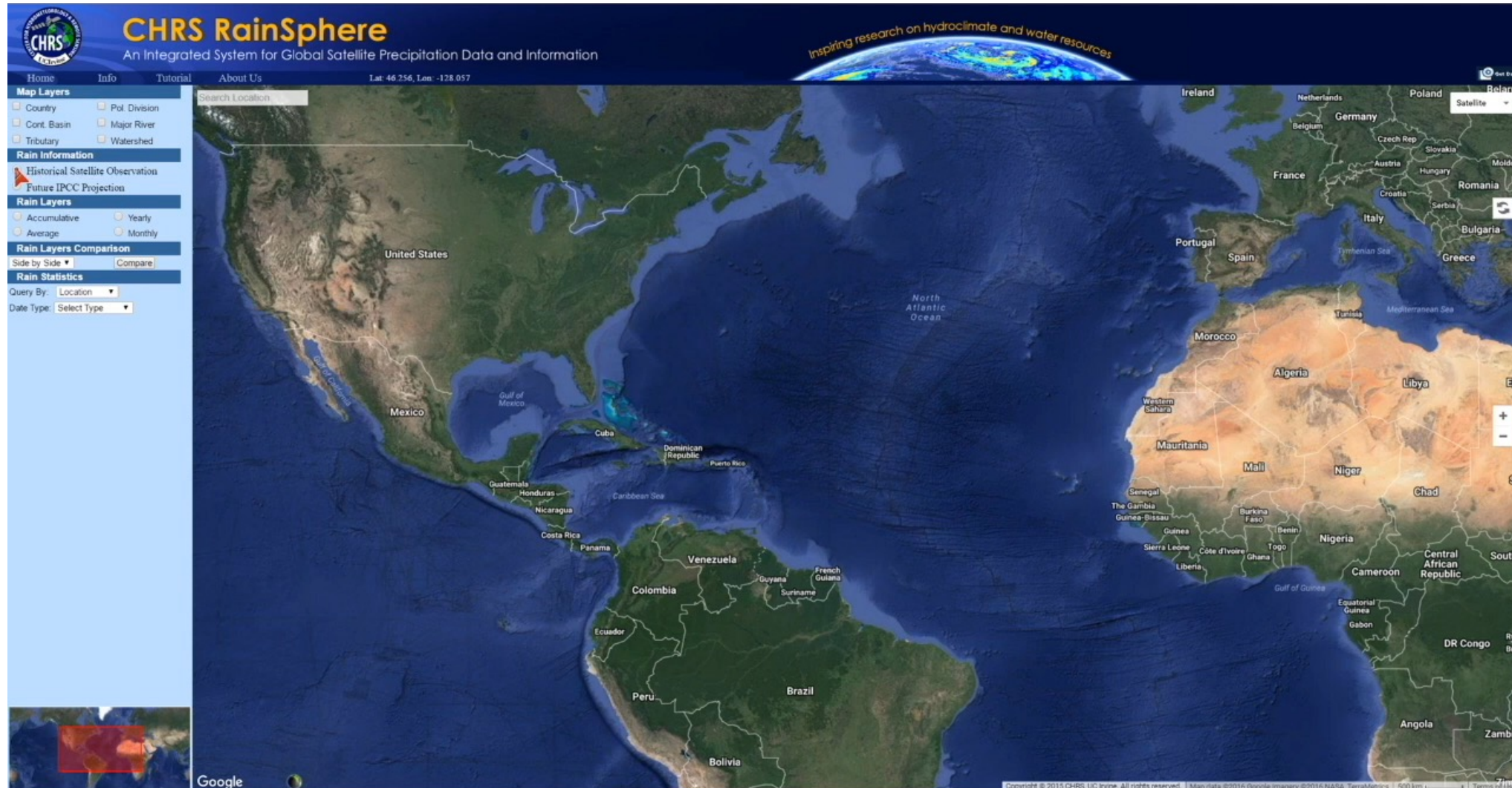
RainSphere

Map Layers

The screenshot displays the CHRS RainSphere web application interface. At the top left is the CHRS logo and the text "CHRS RainSphere" and "An Integrated System for Global Satellite Precipitation Data and Information". Navigation links for Home, Info, Tutorial, and About Us are present. The current location is shown as Lat: 55.279, Lon: -147.129. A search bar for "Search Location" is located at the top of the map area. The map itself is a world map with various layers overlaid, including country boundaries, major rivers, and precipitation data. The map is currently set to "Satellite" view. On the left side, there is a sidebar with several sections: "Map Layers" with checkboxes for Country, Pol. Division, Cont. Basin, Major River, Tributary, and Watershed; "Rain Information" with radio buttons for Historical Satellite Observation and Future IPCC Projection; "Rain Layers" with radio buttons for Accumulative, Yearly, Average, and Monthly; "Rain Layers Comparison" with a "Side by Side" dropdown and a "Compare" button; and "Rain Statistics" with a "Query By" dropdown set to "Location" and a "Date Type" dropdown set to "Select Type". At the bottom left of the map area, there is a small inset image showing a zoomed-in view of a specific region. The Google logo is visible at the bottom left of the map. Copyright information at the bottom right reads: "Copyright © 2015 CHRS, UC Irvine. All rights reserved. | Map data © 2016 InEGI, Imagery © 2016 NASA, TerraMetrics | 500 km | Terms of Use".

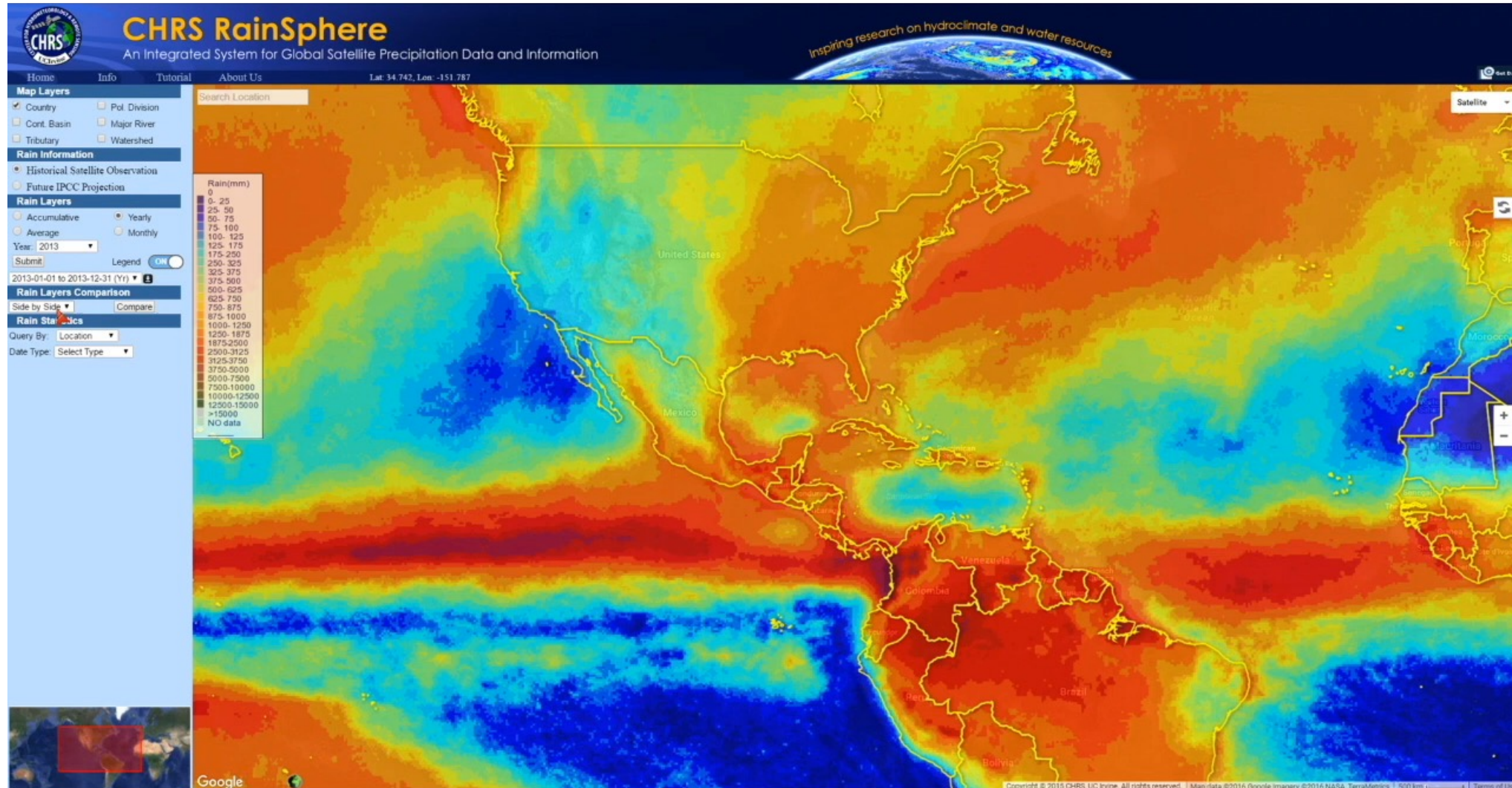
RainSphere

Rain Layers



RainSphere

Rain Comparisons



RainSphere

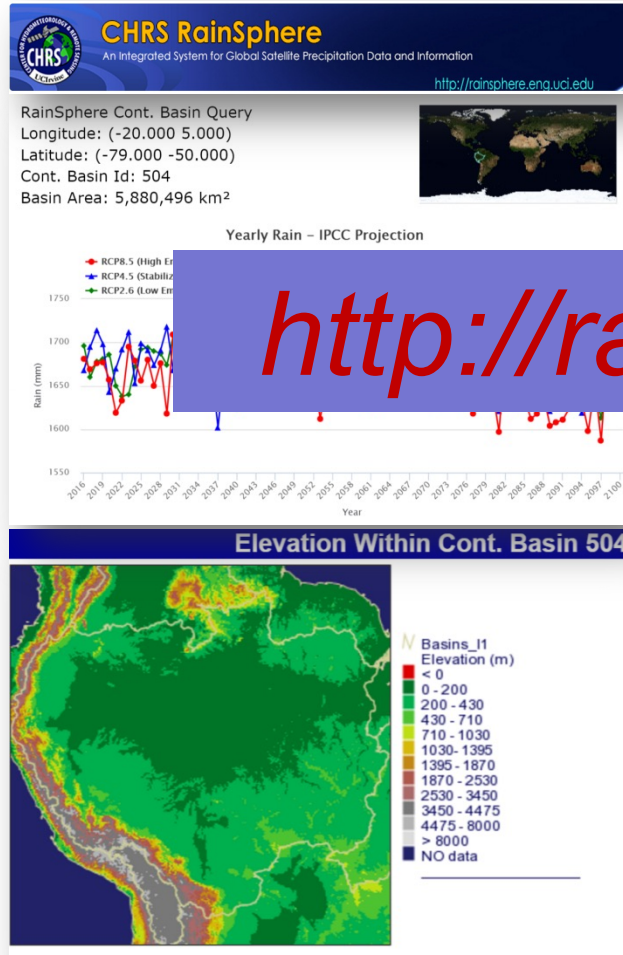
Spatiotemporal Rain Trend Analysis



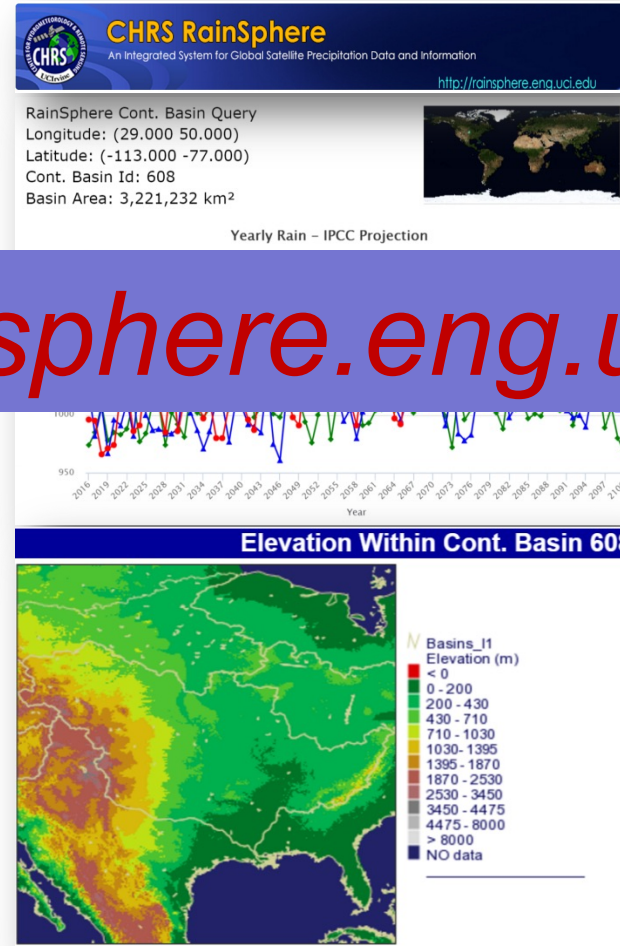
RainSphere

Future Projection

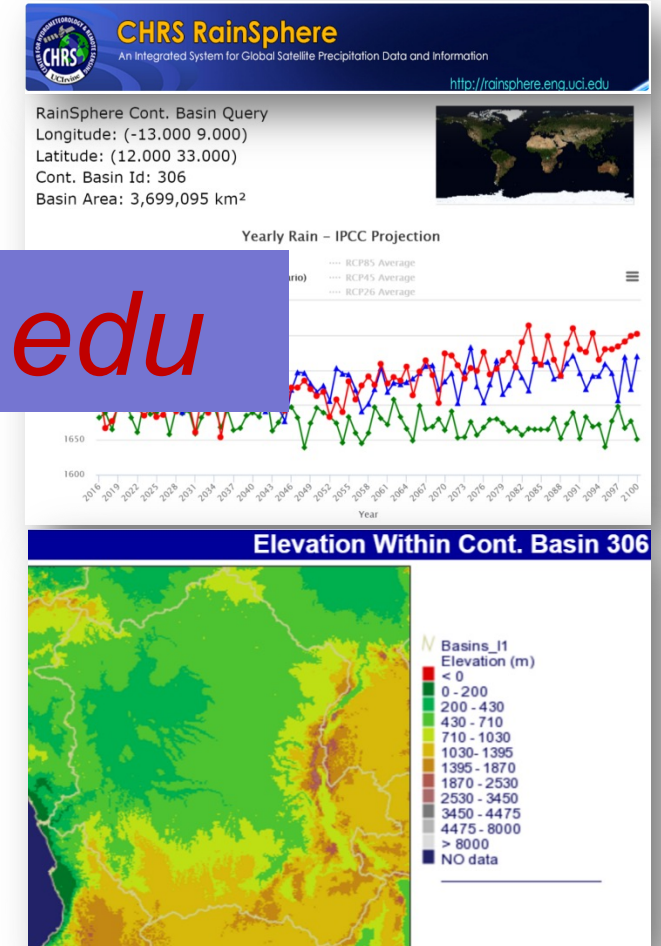
Amazon



Mississippi



Congo



<http://rainsphere.eng.uci.edu>



CHRS iRain

An Integrated System for Global Real-time Precipitation Observation

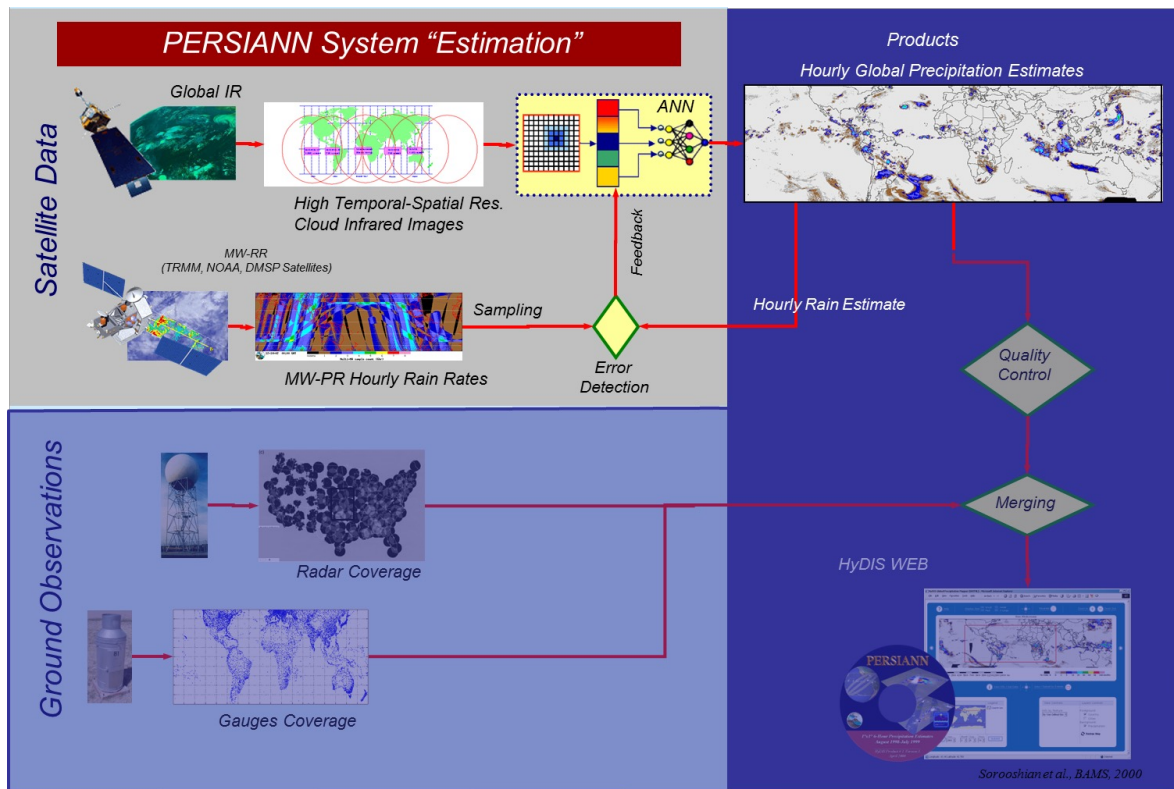
Inspiring research on hydroclimate and water resources

CHRS iRain

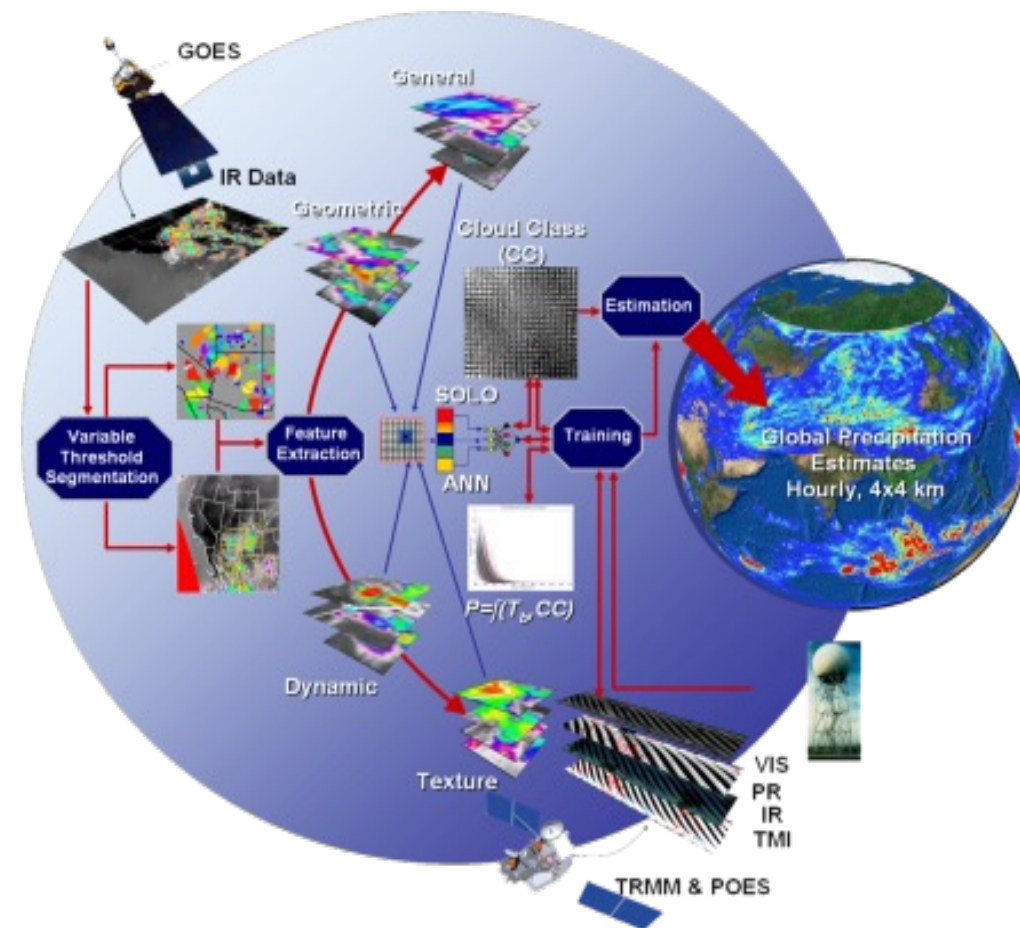
An Integrated System for Global Real-time Precipitation Observation

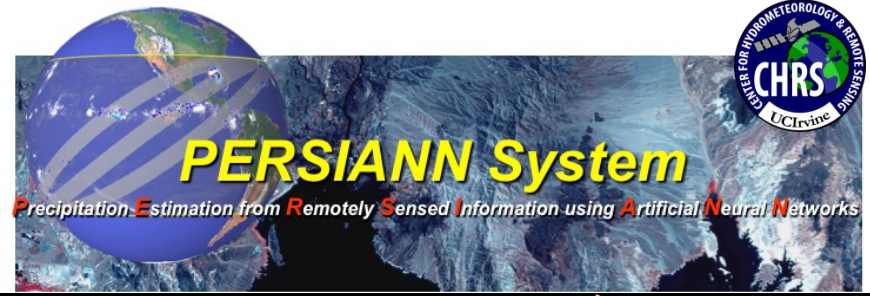


Precipitation Estimation from Remotely Sensed Information using Artificial Neural Networks (PERSIANN)



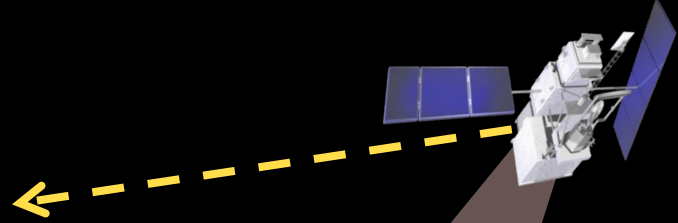
PERSIANN-CCS





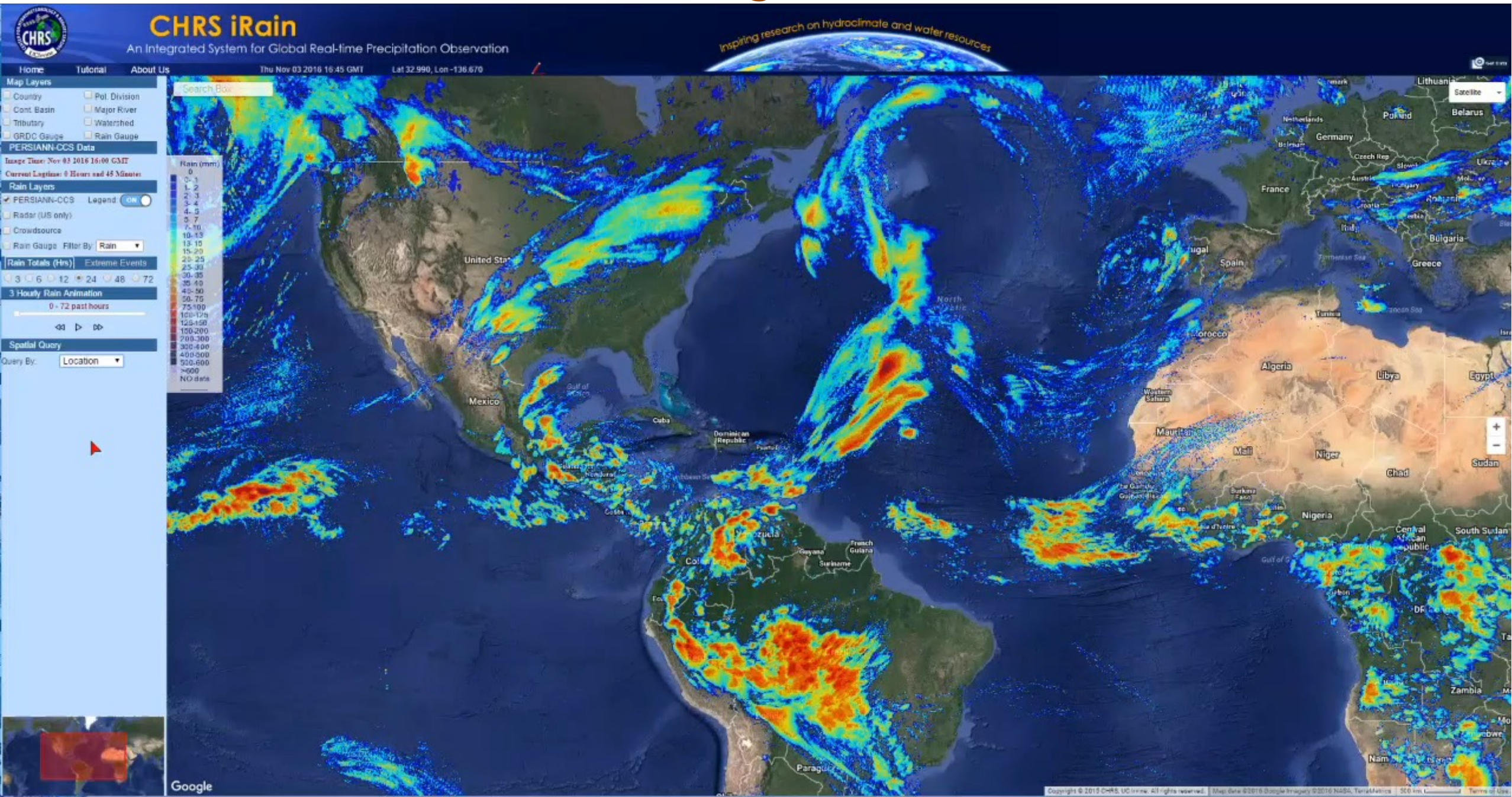
PERSIANN System
Precipitation Estimation from Remotely Sensed Information using Artificial Neural Networks

CHRS
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UC Irvine



Rain!







CHRS iRain


An Integrated System for Global Real-time Precipitation Observation

Inspiring research on hydroclimate and water resources

iRain available on App Store

iRain UCI [View More by This Developer](#)

By University of California, Irvine
Open iTunes to buy and download apps.



[View in iTunes](#)


This app is designed for both iPhone and iPad


Free
Category: Weather
Updated: Oct 29, 2016
Version: 2.0.2
Size: 36.3 MB
Language: English
Seller: University of California, Irvine
© CHRS UC Irvine
Rated 4+

Compatibility: Requires iOS 9.0 or later. Compatible with iPhone, iPad, and iPod touch.

Customer Ratings
We have not received enough ratings to display an average for the current version of this application.

More by University of California, Irvine

 UCIOTA
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 GeriTeam
[View in iTunes](#)

Description
Welcome to iRain version 2.02!
The app is licensed to the Center for Hydrometeorology & Remote Sensing (CHRS) at the University of California
[iRain UCI Support](#) ...More

What's New in Version 2.0.2

- Loading centroids has been made more reliable.
- Added the version number at the bottom of the "About" page.
- Improved the animation of the search bar.

...More

Screenshots iPhone | iPad

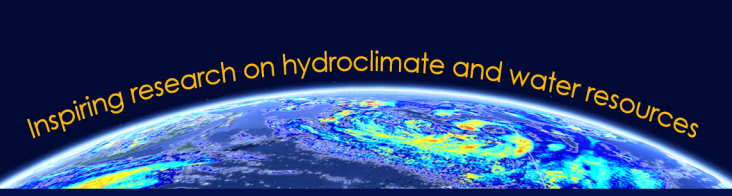
Report weather at your location!

Zoom in to view rainfall measurement



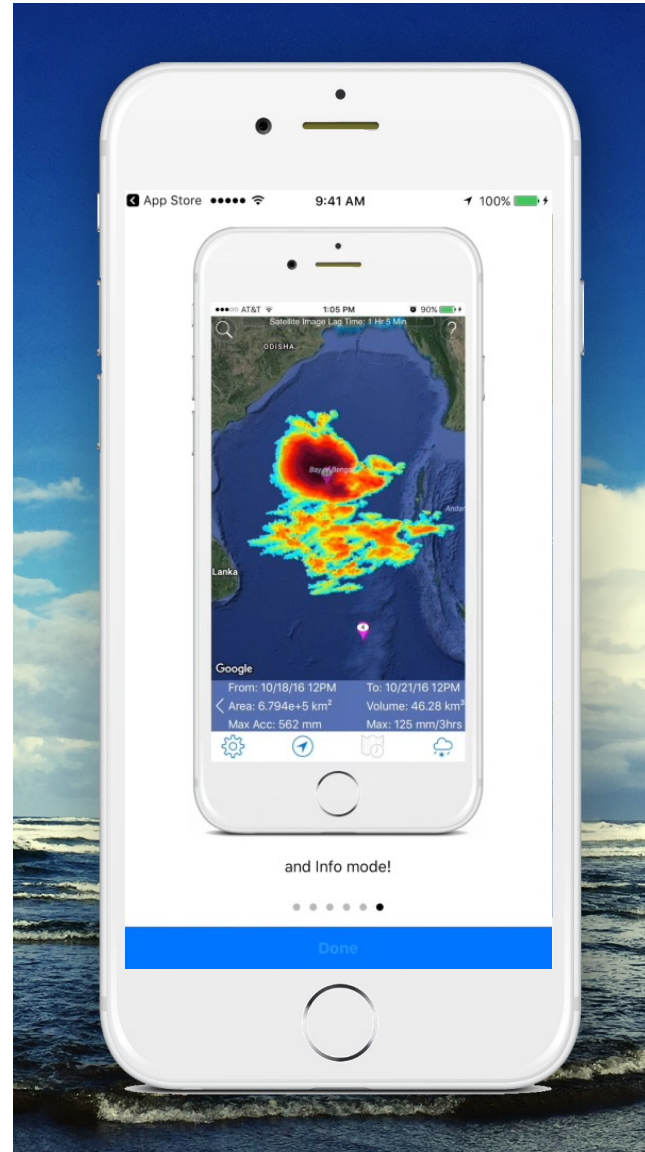
CHRS iRain

An Integrated System for Global Real-time Precipitation Observation



Inspiring research on hydroclimate and water resources

Show rain totals
from 3 hours to 3
days



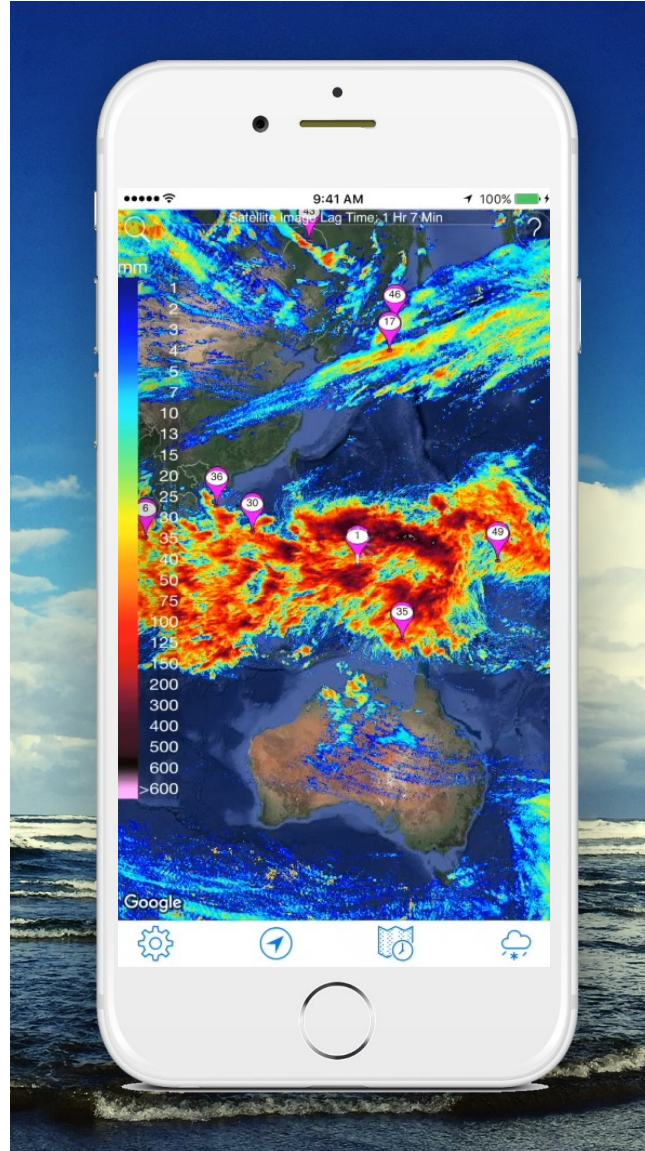


CHRS iRain

An Integrated System for Global Real-time Precipitation Observation

Inspiring research on hydroclimate and water resources

Extreme
rainfall event
animation

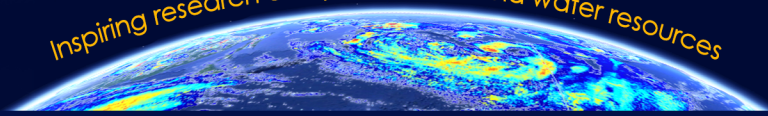




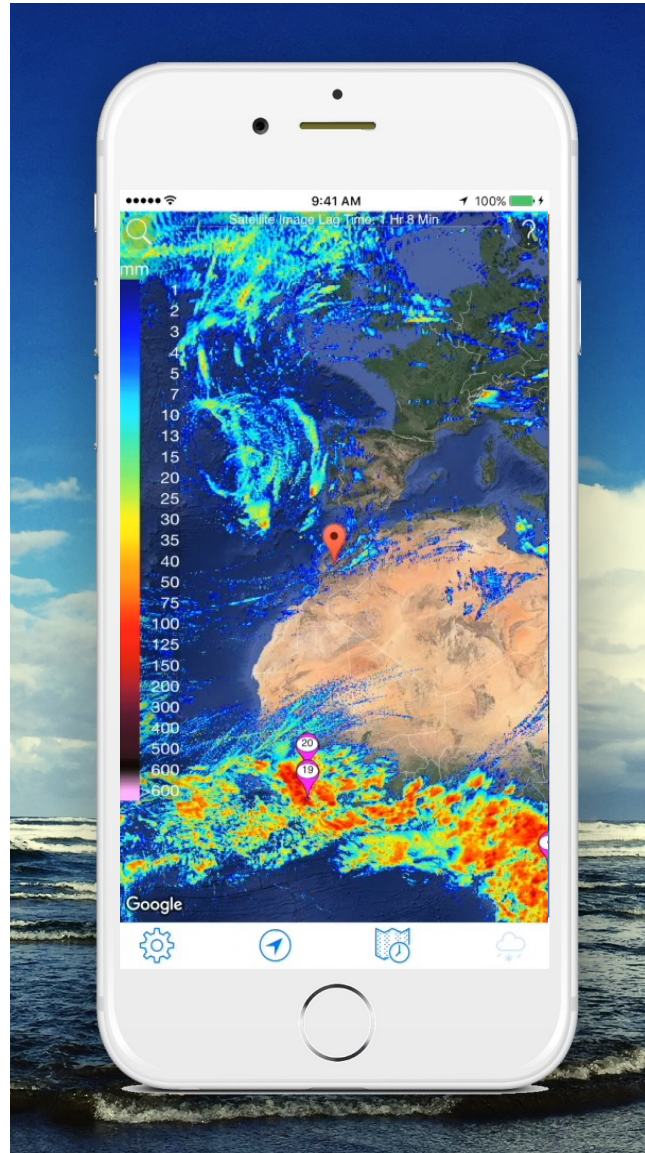
CHRS iRain

An Integrated System for Global Real-time Precipitation Observation

Inspiring research on hydroclimate and water resources



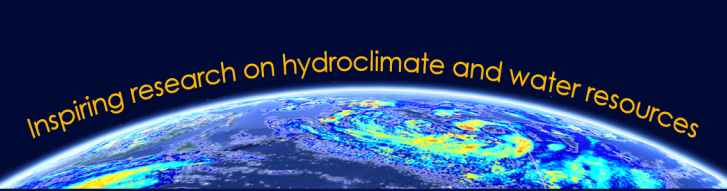
Report rainfall
at your
location





CHRS iRain

An Integrated System for Global Real-time Precipitation Observation



Who uses CHRS's Products?



CHRS User Statistics

Overall

[CHRS Homepage](#)

[iRain](#)

[RainSphere](#)

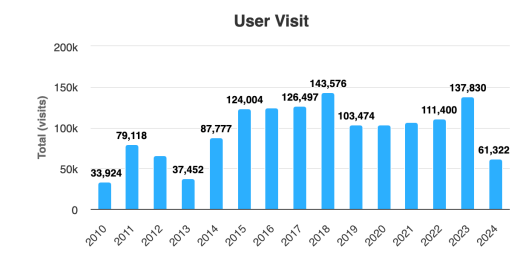
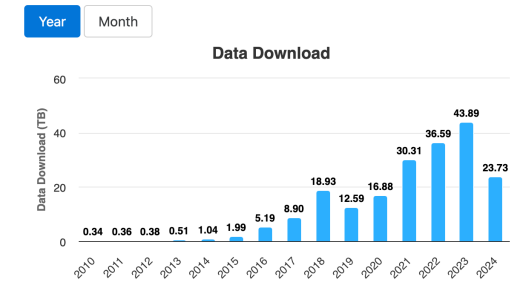
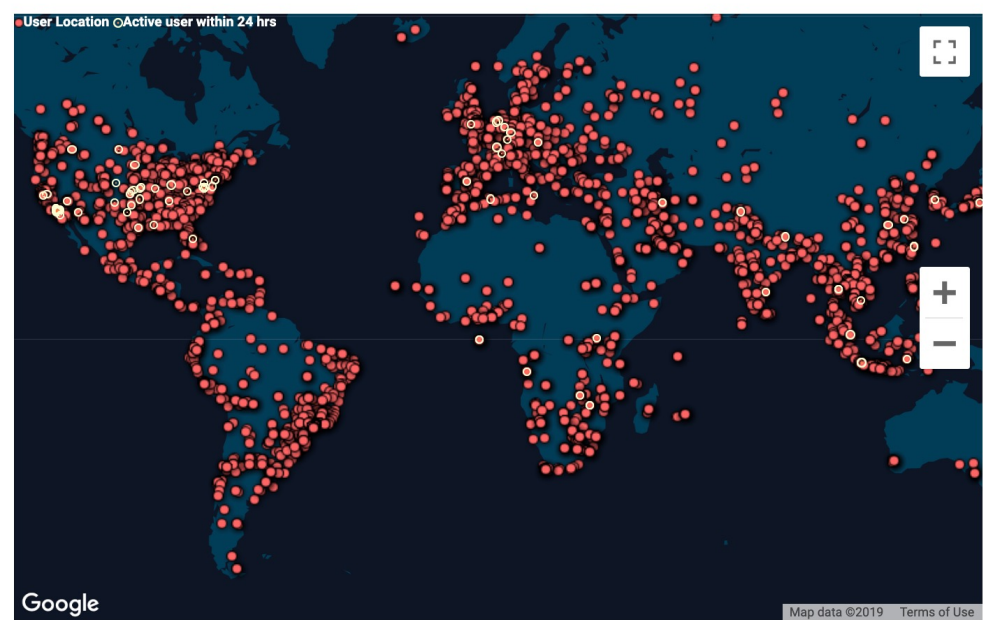
[Data Portal](#)

[CONNECT](#)

Total Visits: 1,453,614 since 31-Dec-2009

Countries: 218 countries registered

| # | Country | Total Visits |
|----|---------------------------|--------------|
| 1 | United States | 657,522 |
| 2 | India | 73,659 |
| 3 | Private IP | 58,660 |
| 4 | China | 52,328 |
| 5 | Thailand | 45,480 |
| 6 | Indonesia | 40,915 |
| 7 | Israel | 38,563 |
| 8 | Iran, Islamic Republic Of | 33,814 |
| 9 | France | 26,696 |
| 10 | Viet Nam | 25,688 |
| 11 | Philippines | 25,344 |
| 12 | Netherlands | 24,540 |



Acknowledgements

