Fifth Workshop on Water Resources in Developing Countries:
Hydroclimate Modeling and Analysis Tools
May 27- June 7 2019

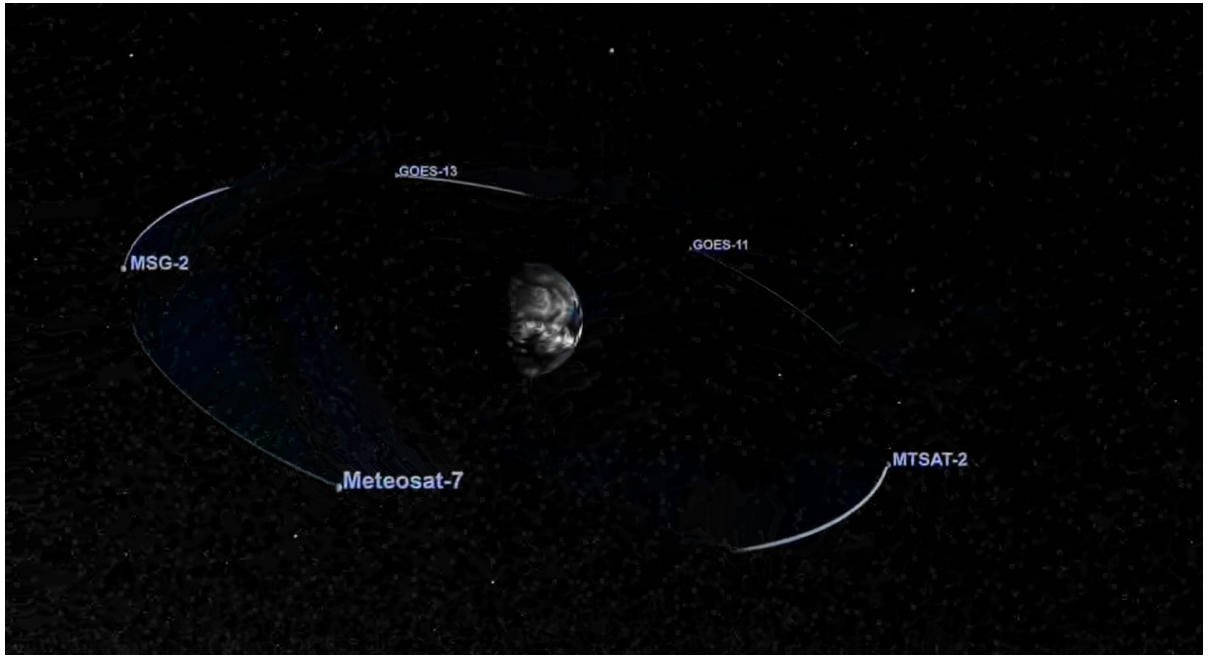
UC-Irvine CHRS's global satellite precipitation products and tools

Phu Nguyen, Soroosh Sorooshian, Kuolin Hsu, Dan Braithwaite

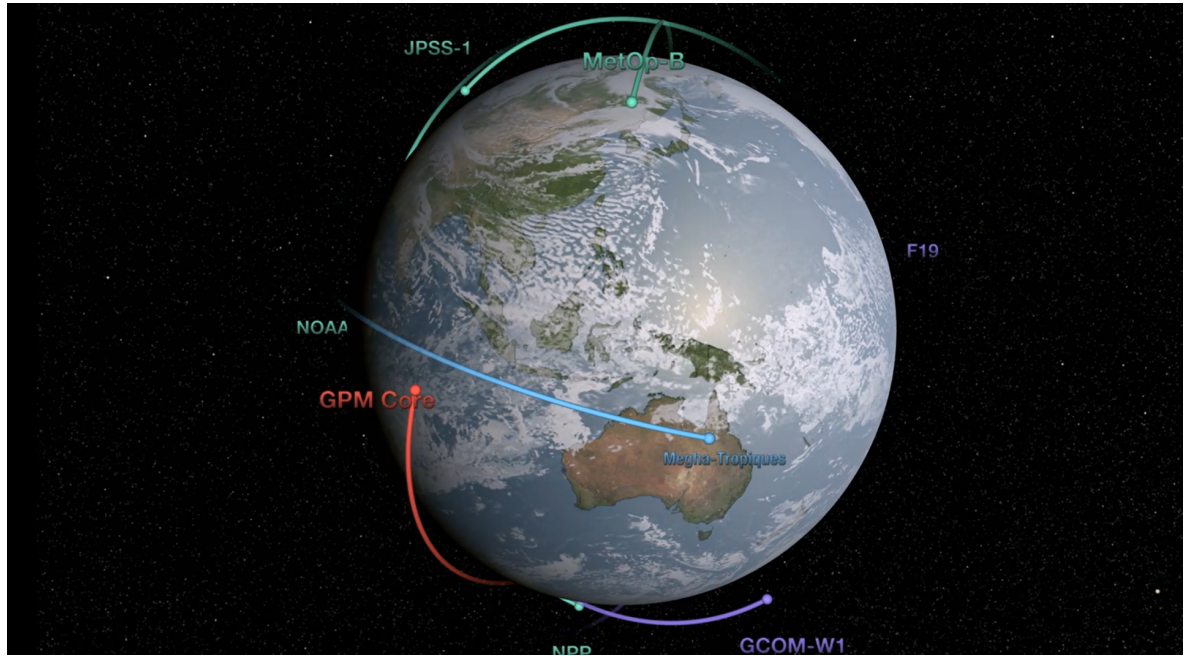
Sponsors

Satellite Precipitation Observation

Geo Satellites

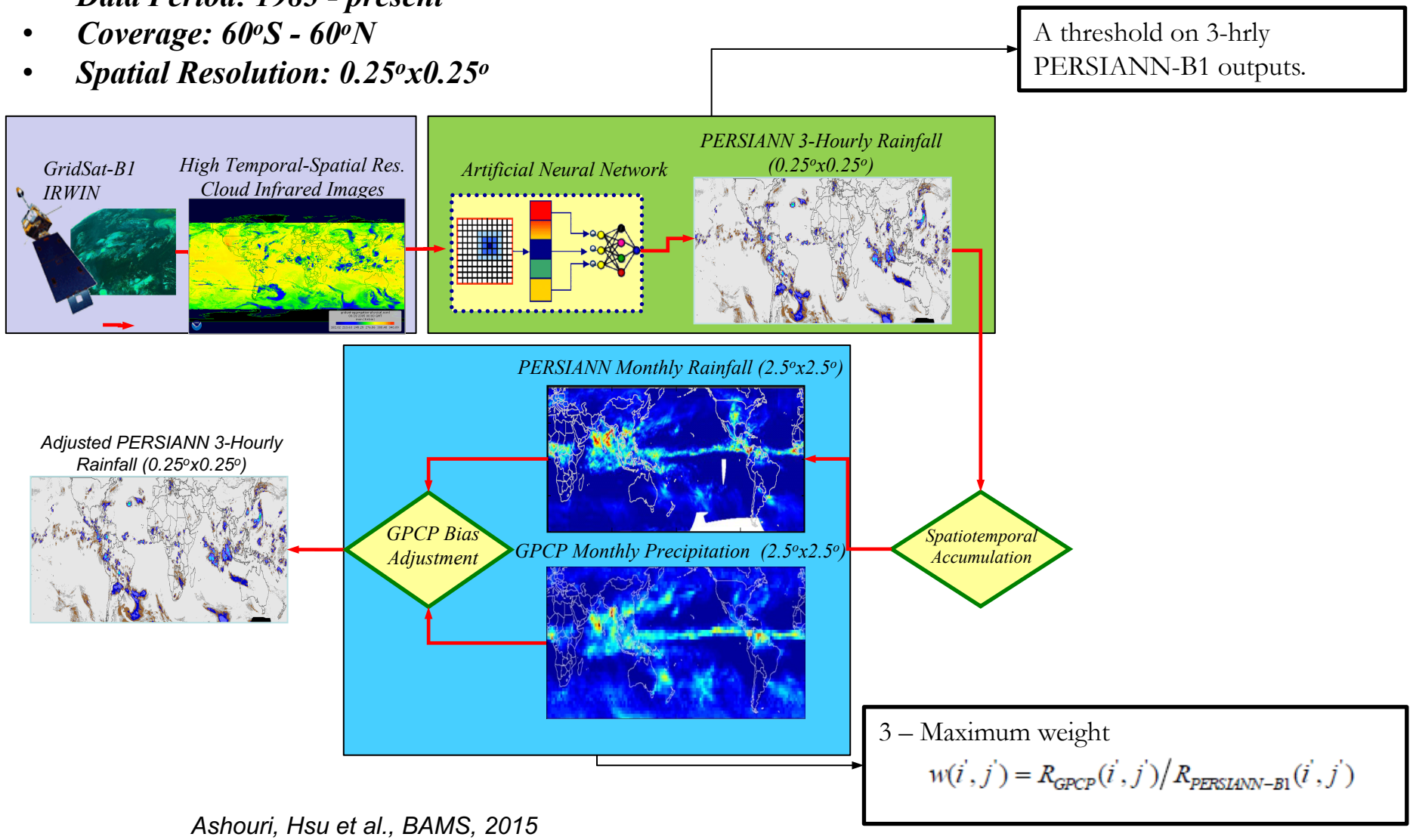


LEO Satellites



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 NCEI »

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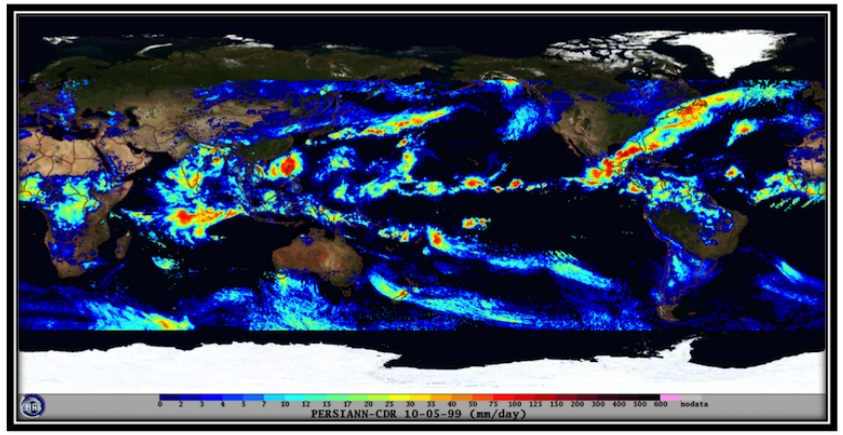
Home > Climate Data Record Program > Atmospheric > Precipitation - PERSIANN-CDR

Data Access
- FTP
- THREDDS

Documentation
- CDR Flyer
- Use Agreement
- Algorithm Description
- Data Flow Diagram
- Maturity Matrix
- Source Code

Information
- Contact
- Registration (optional)

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

Index of /cdr/persiann/files/

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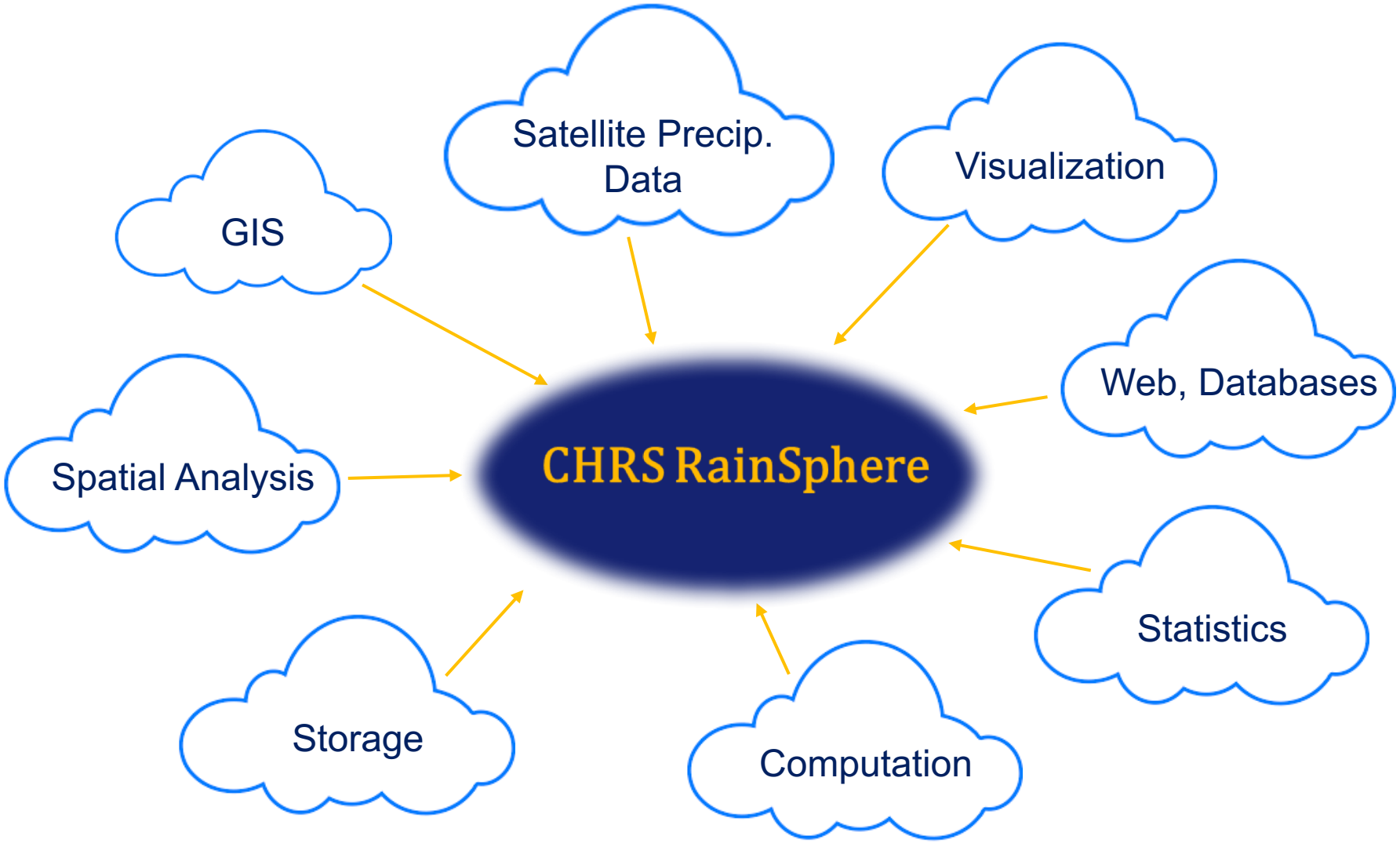
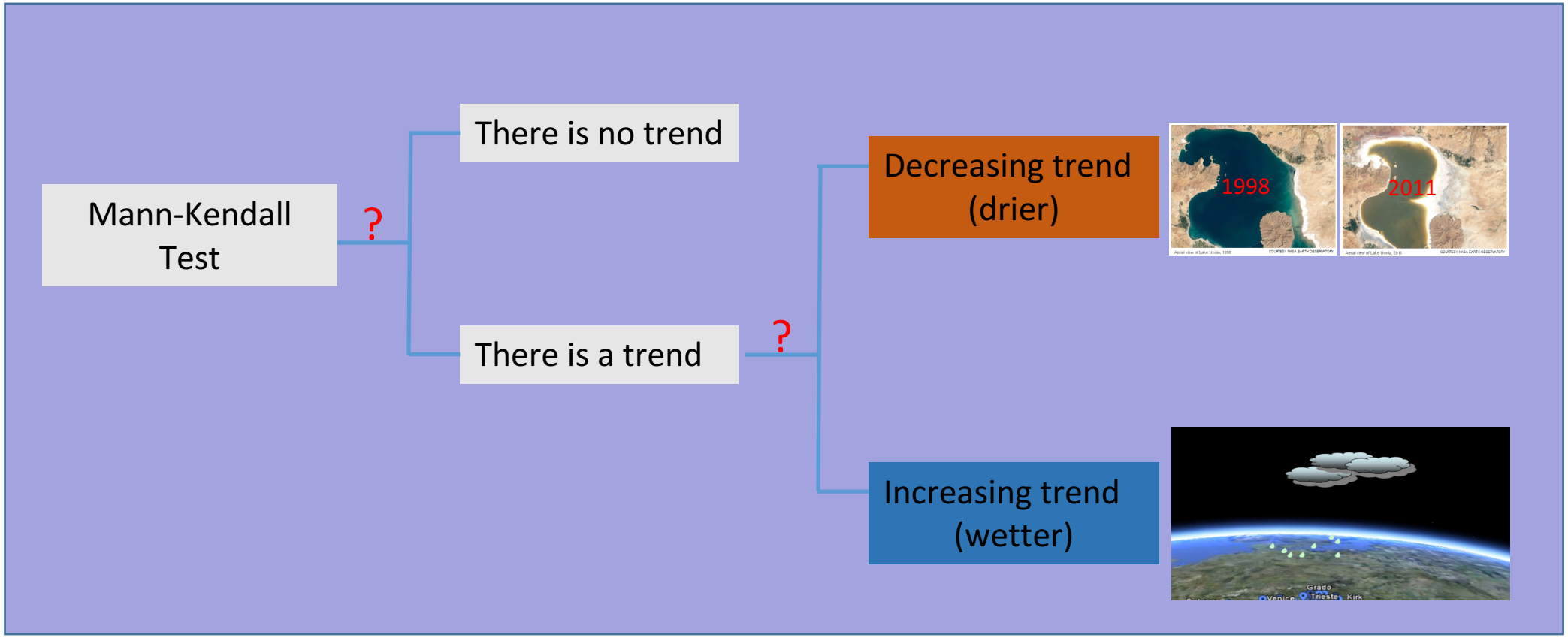
Methods


Satellite Precip. Data
Visualization
GIS
Web, Databases
Spatial Analysis
CHRS RainSphere
Statistics
Storage
Computation

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 α=0.05 (or 95% confidence level)



RainSphere Interface

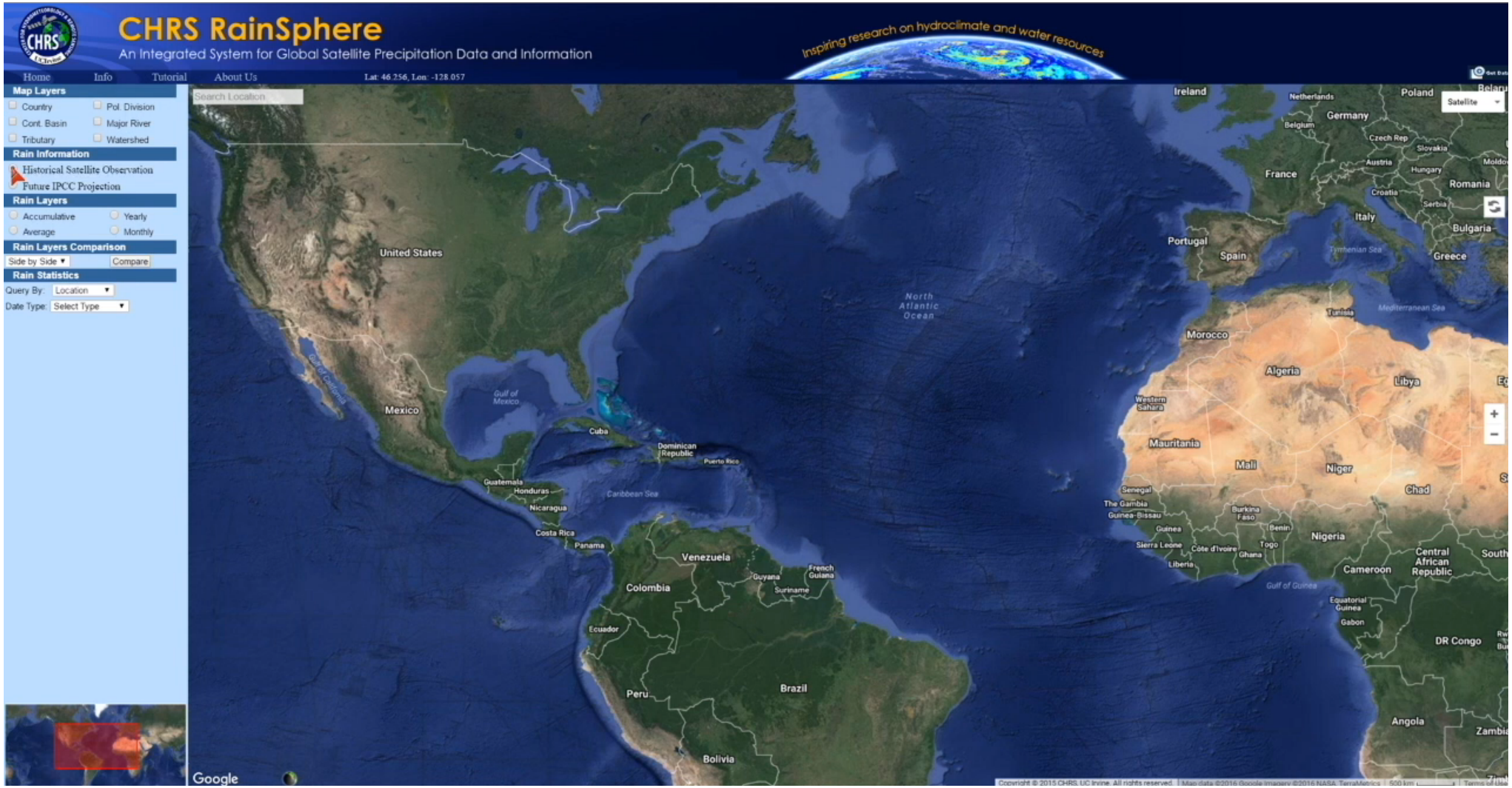
http://rainsphere.eng.uci.edu

RainSphere

Map Layers

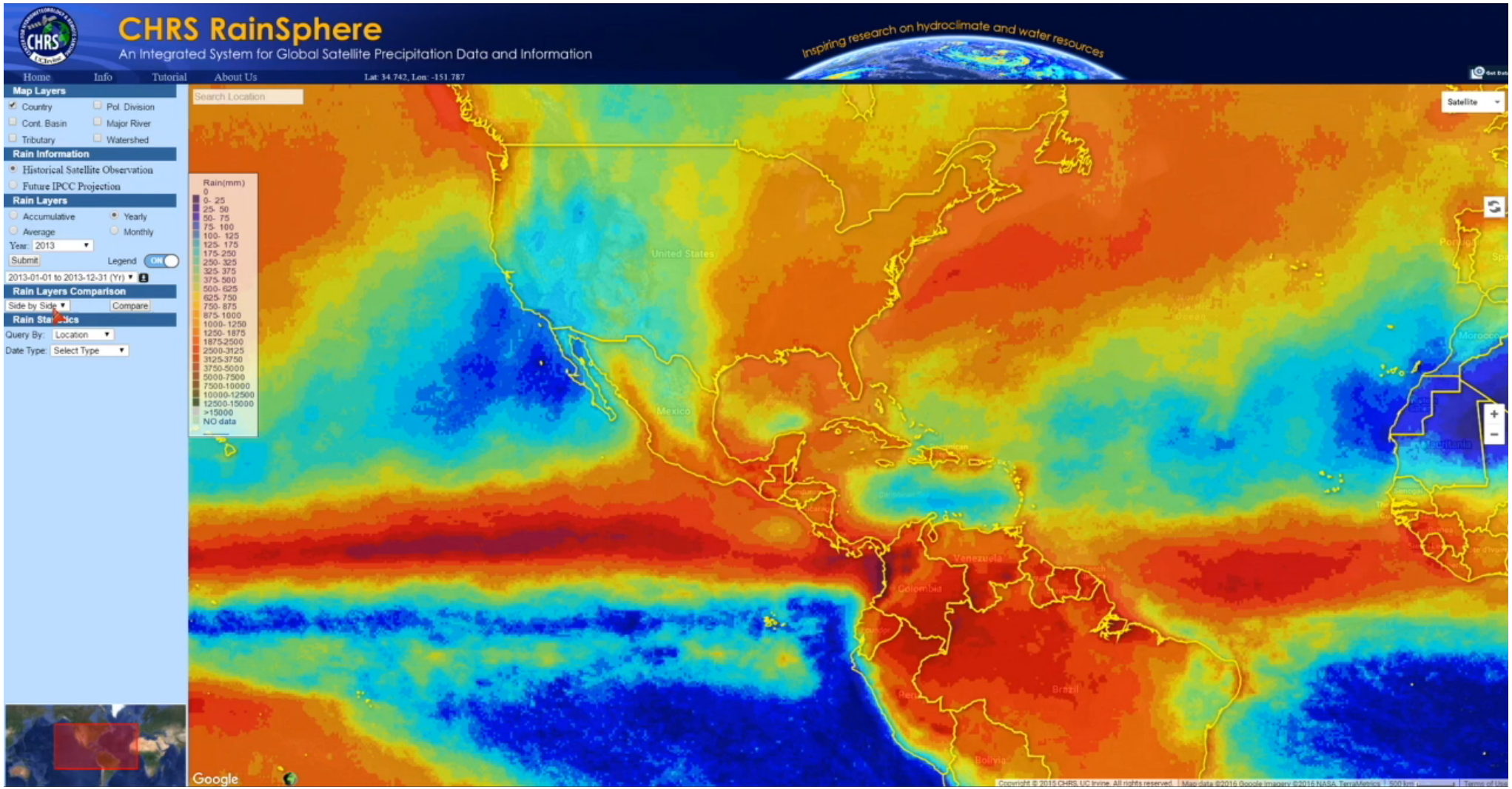
RainSphere

Rain Layers



RainSphere

Rain Comparisons



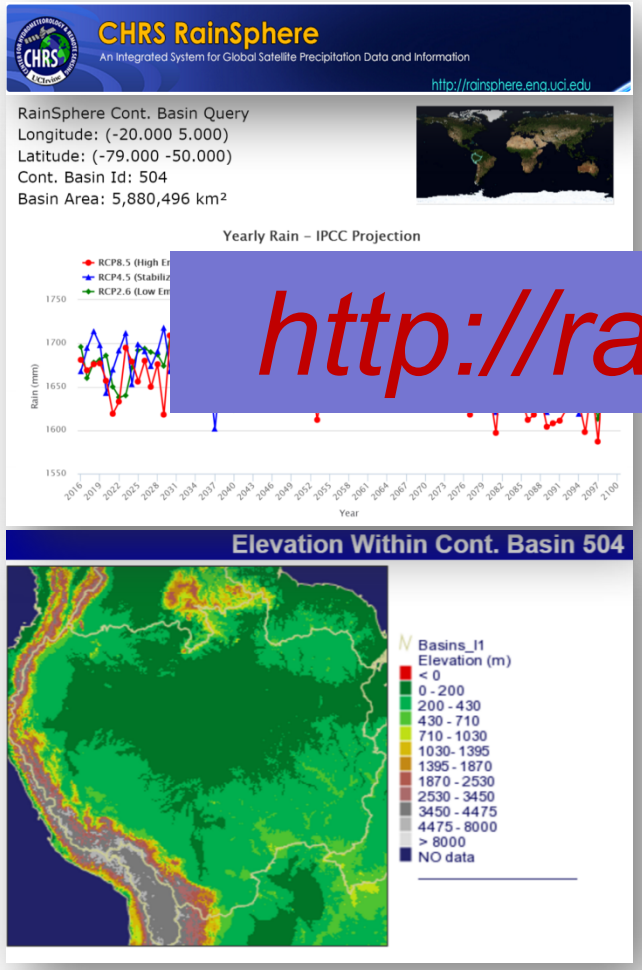
RainSphere

Spatiotemporal Rain Trend Analysis

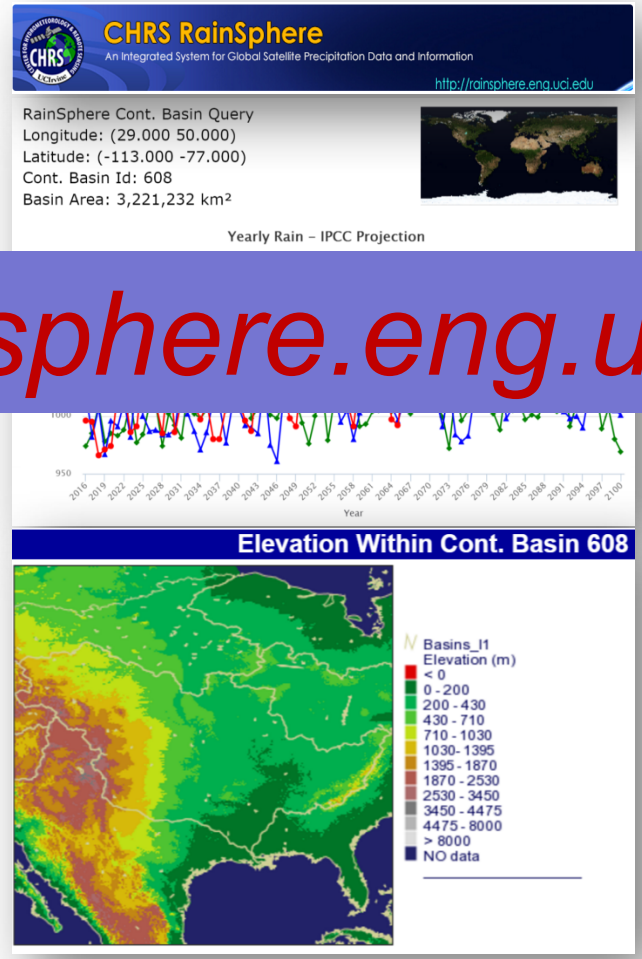
RainSphere

Future Projection

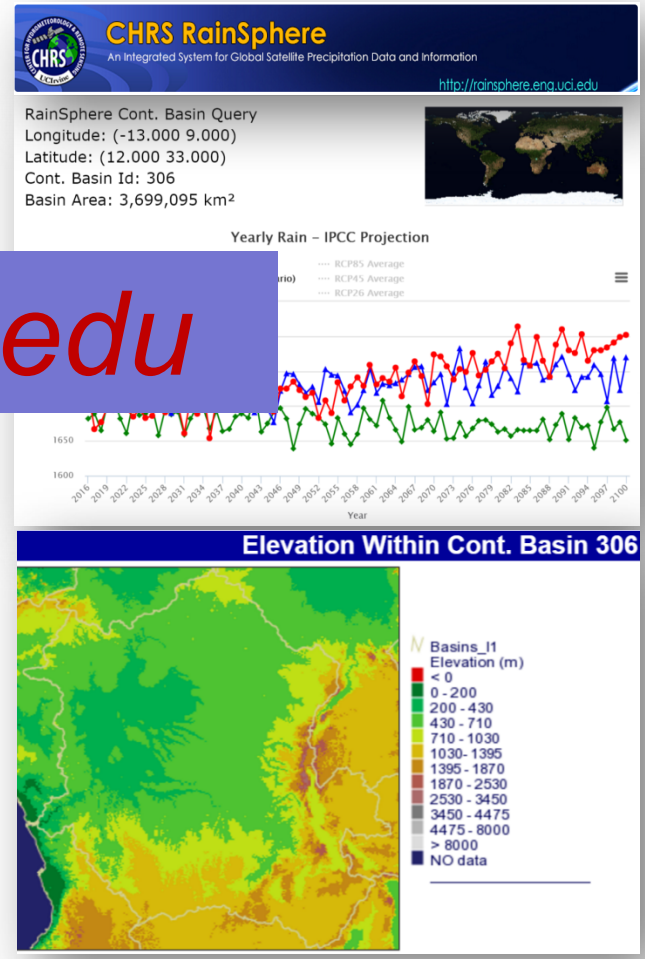
Amazon



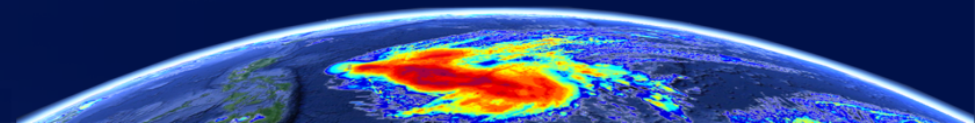
Mississippi



Congo



http://rainsphere.eng.uci.edu



CHRS CONNECT

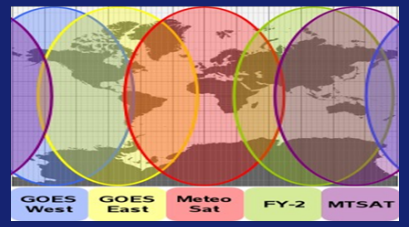
A Global Extreme Precipitation Event Database

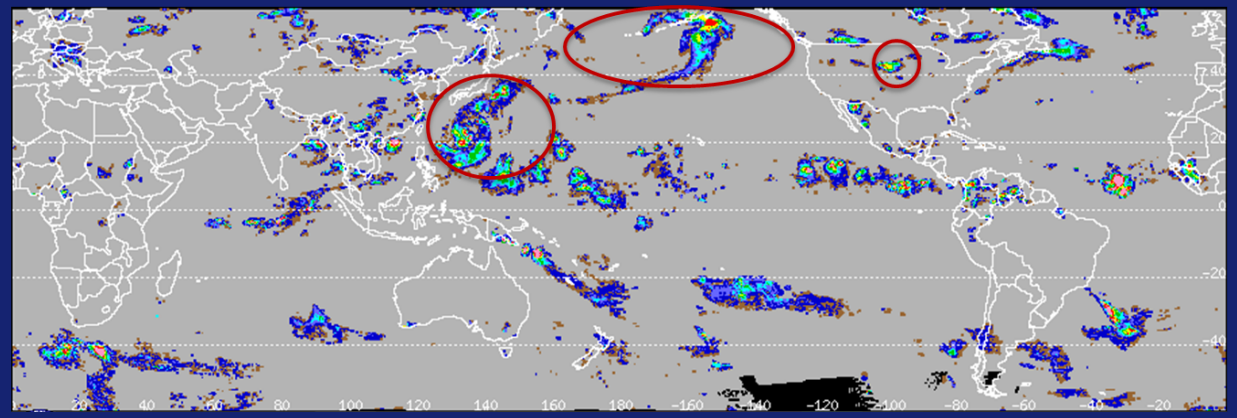
CHRS CONNECT

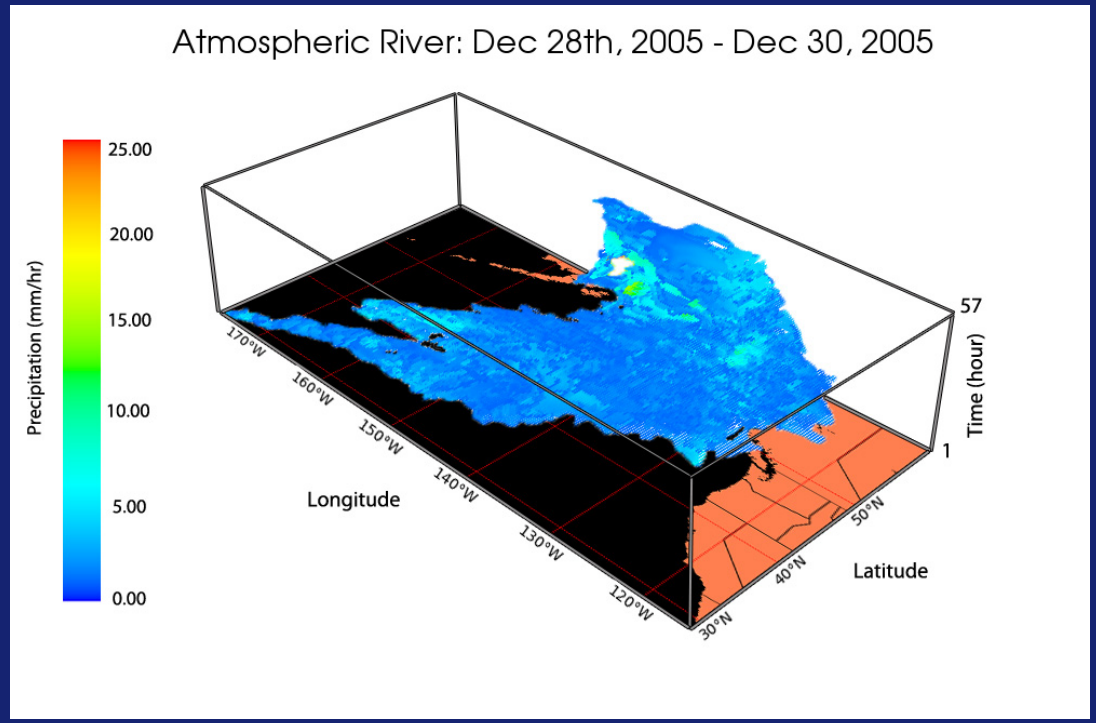
A Global Extreme Precipitation Event Database

Inspiring research on climate and water resources

- Data set: Hourly bias corrected PERSIANN data
- 0.25 degree
- 480 rows x 1440 columns
- 60^0 North - 60^0 South
- March 2000 – June 2015
- Exist for 24hr and 1mm threshold (71,000+ events)





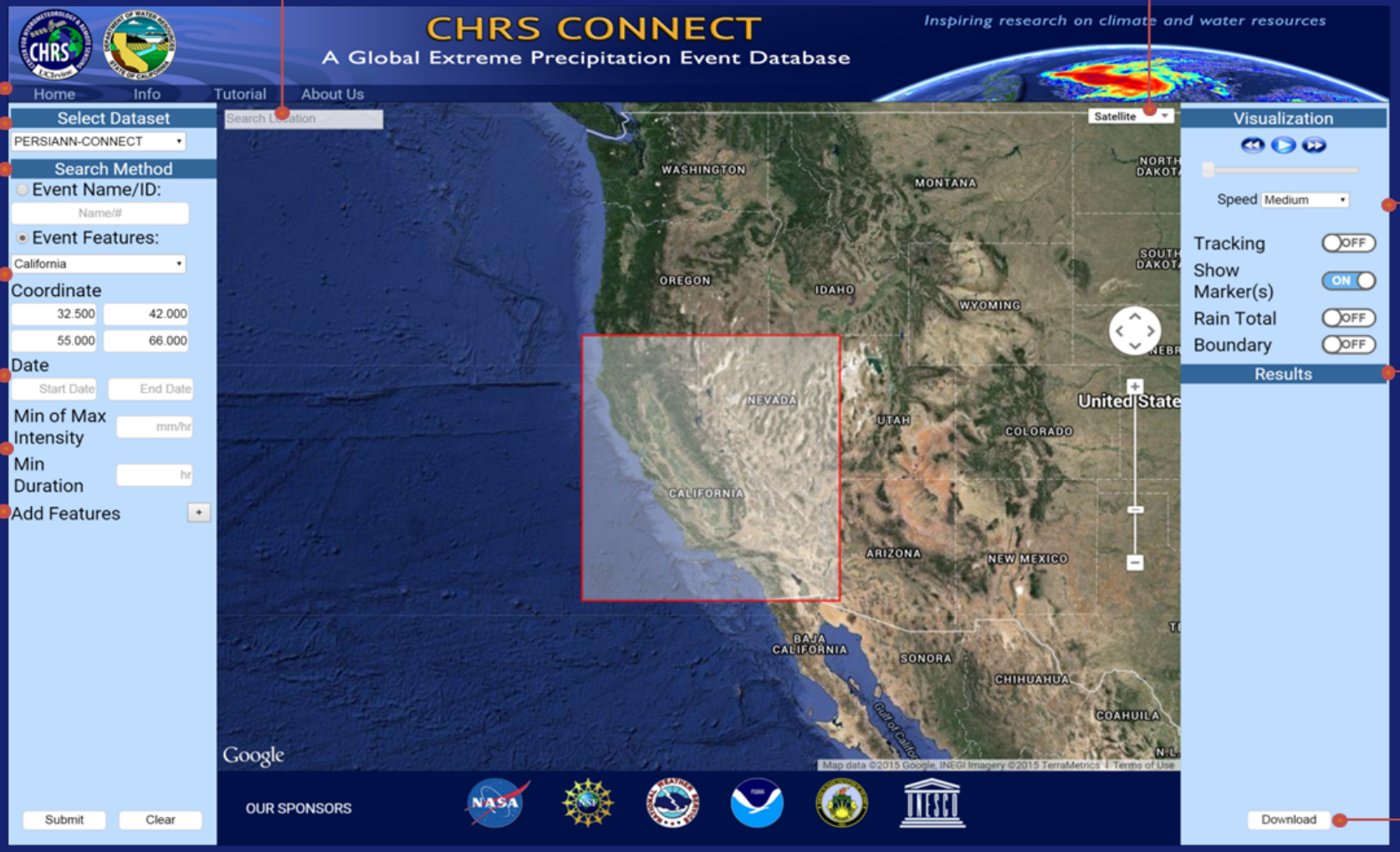


Sellars, S., P. Nguyen, W. Chu, X. Gao, K. Hsu, and S. Sorooshian (2013), Computational Earth Science: Big Data Transformed Into Insight, EOS Trans. AGU, 94(32),277

CHRS CONNECT

A Global Extreme Precipitation Event Database

Inspiring research on climate and water resources



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Base maps

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Dataset Selection

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Spatial Selection

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Define Extreme Event

Search by Features

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End Date
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Yellow Sea
China
East China Sea
Nepal
Bhutan
Bangladesh
Taiwan
Myanmar (Burma)
Laos
Philippine Sea
Thailand
South China Sea
Luzon
Vietnam
Bay of Bengal
Cambodia
Philippines
Panay
Andaman Sea
Gulf of Thailand
Palawan
Negros
Mindanao
Basilan
Malaysia
Celebes Sea
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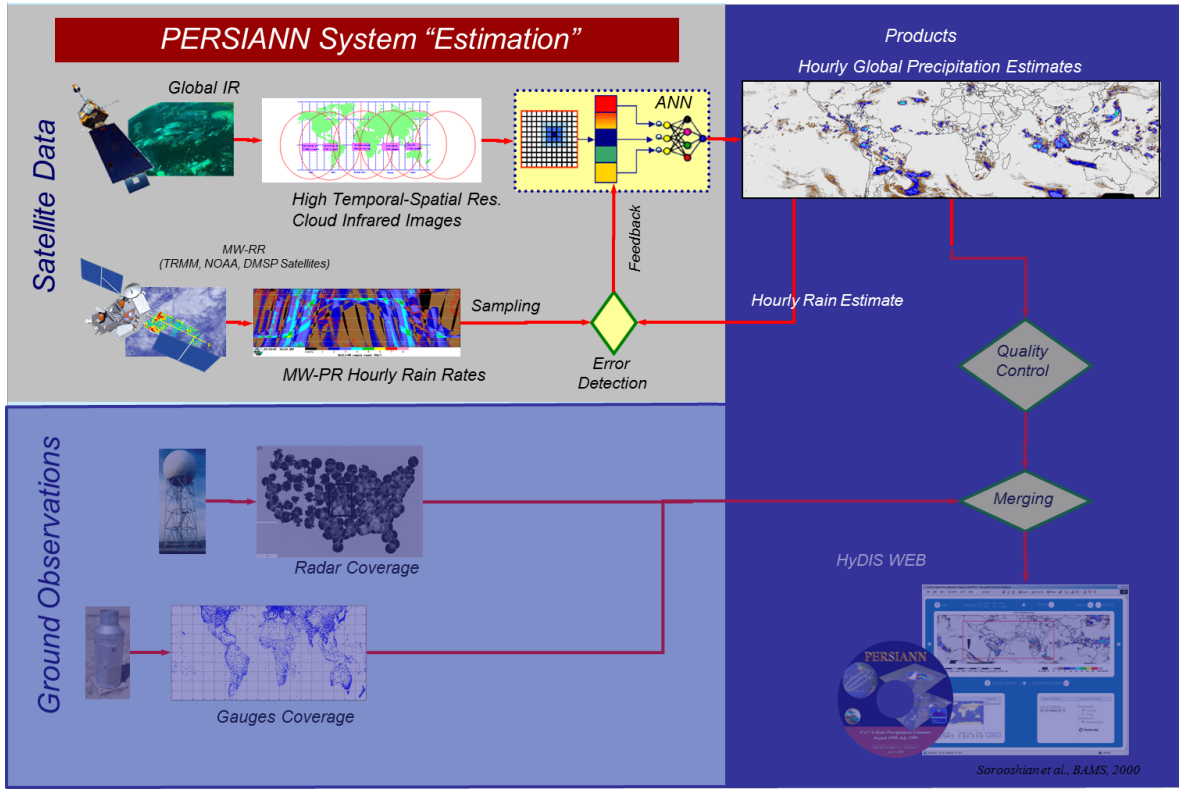
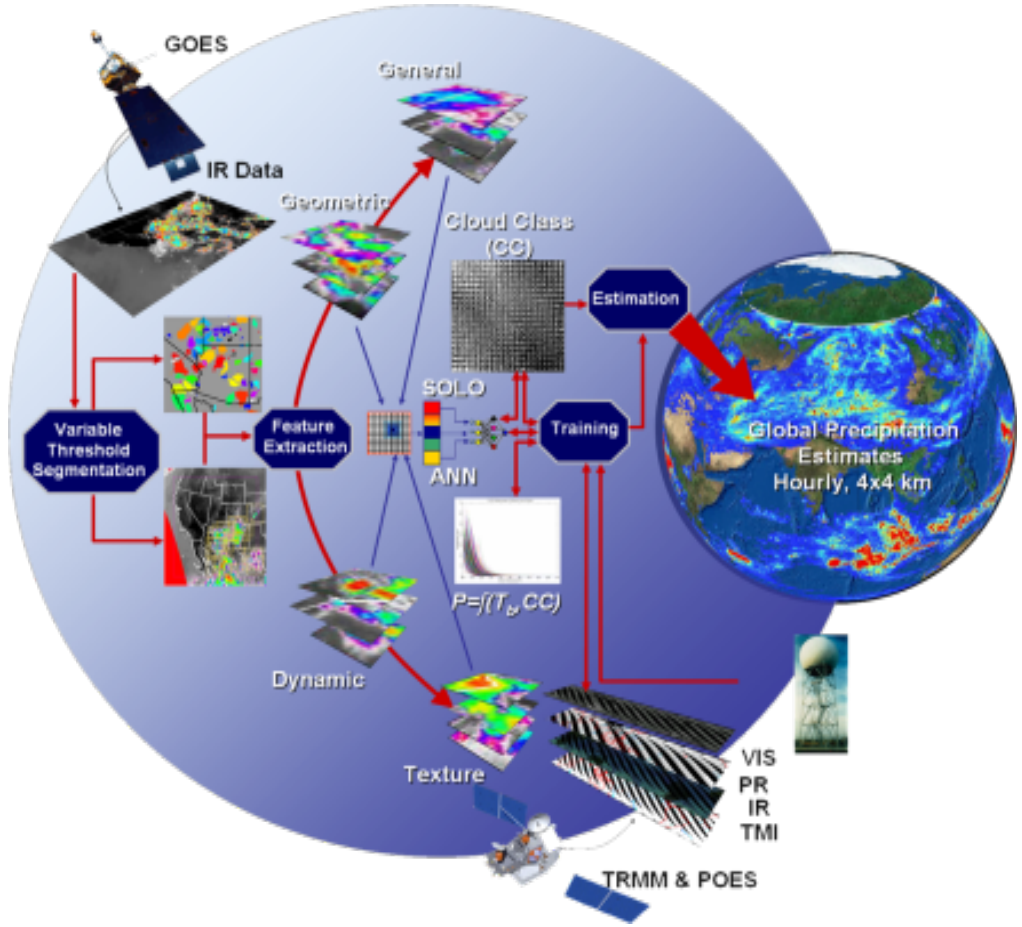
CHRS iRain

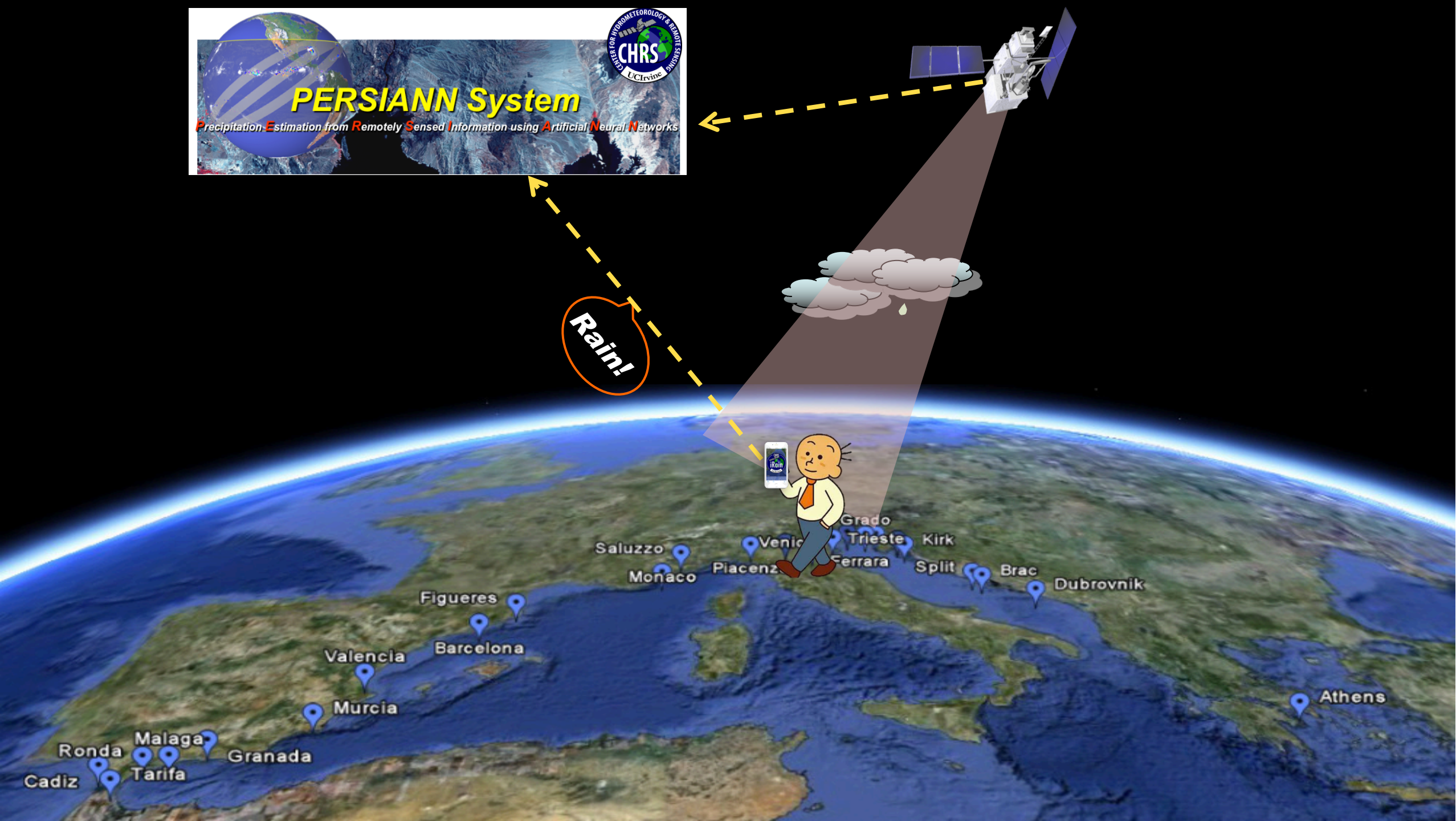
An Integrated System for Global Real-time Precipitation Observation

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
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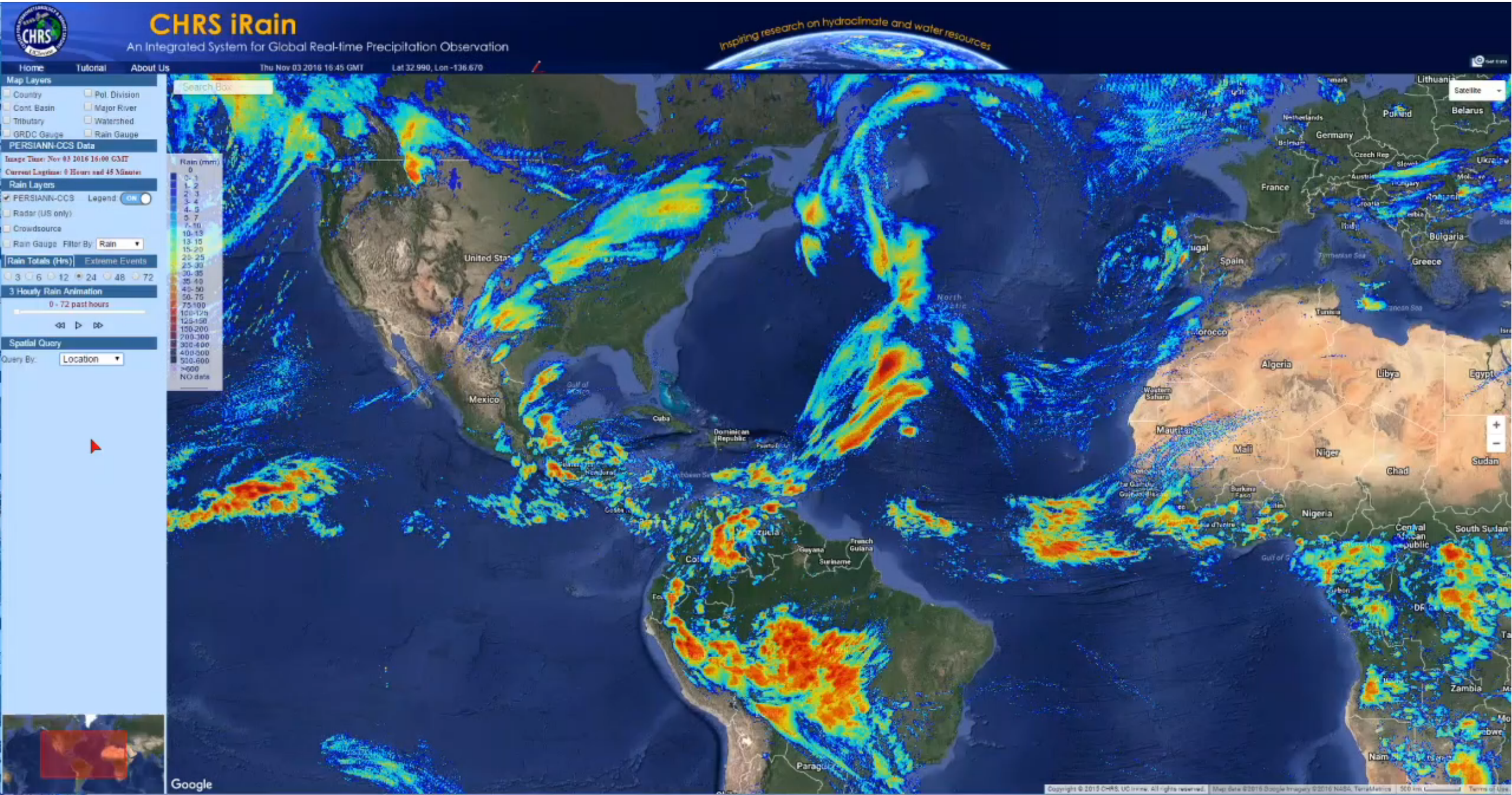
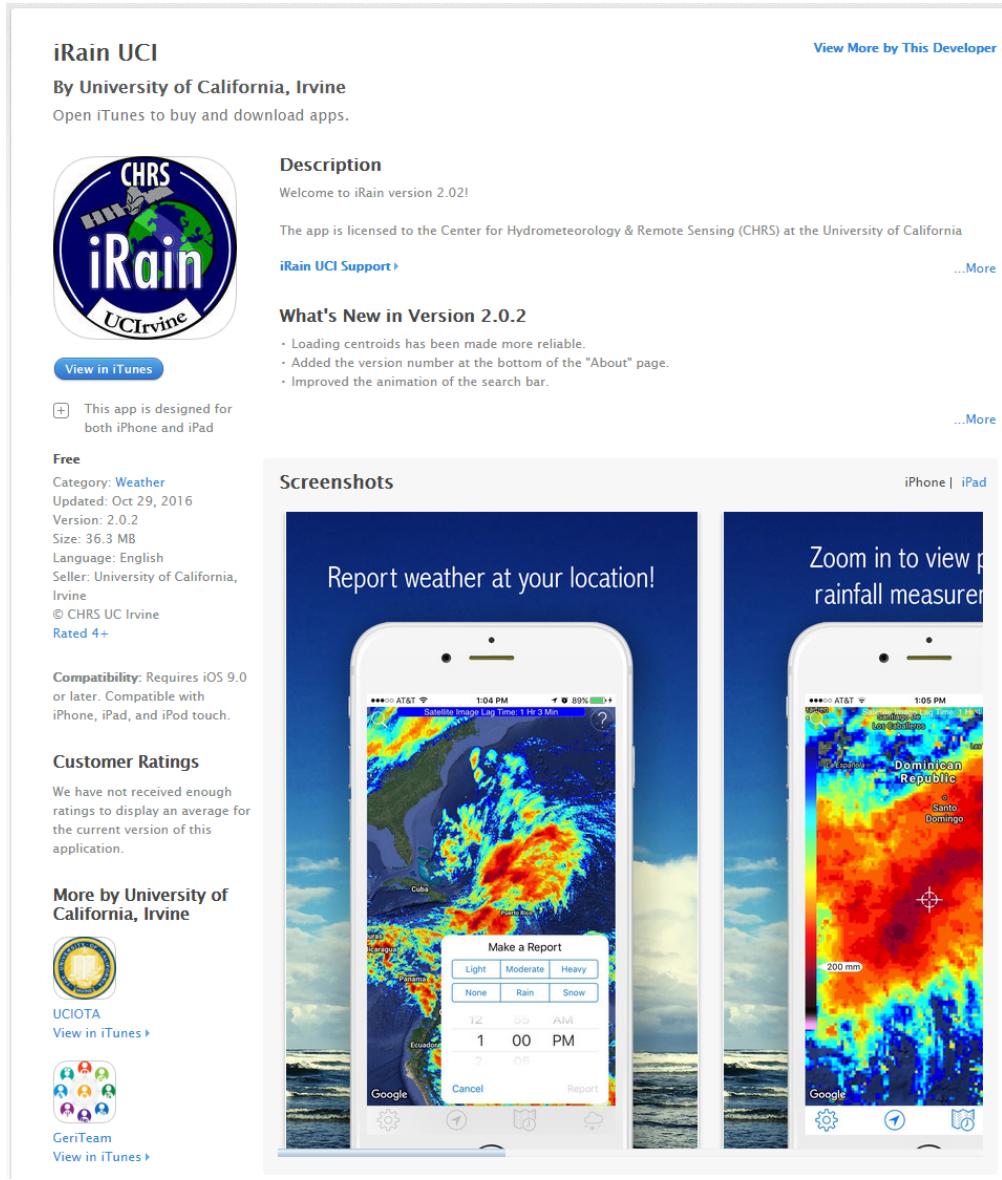
UCIrvine
CENTER FOR HYDROMETEOROLOGY & REMOTE SENSING
Rain!
Grado
Trieste
Kirk
Saluzzo
Monaco
Split
Brac
Dubrovnik
Figueres
Barcelona
Valencia
Murcia
Athens
Malaga
Ronda
Granada
Tarifa
Cadiz

iRain.eng.uci.edu



iRain available on App Store

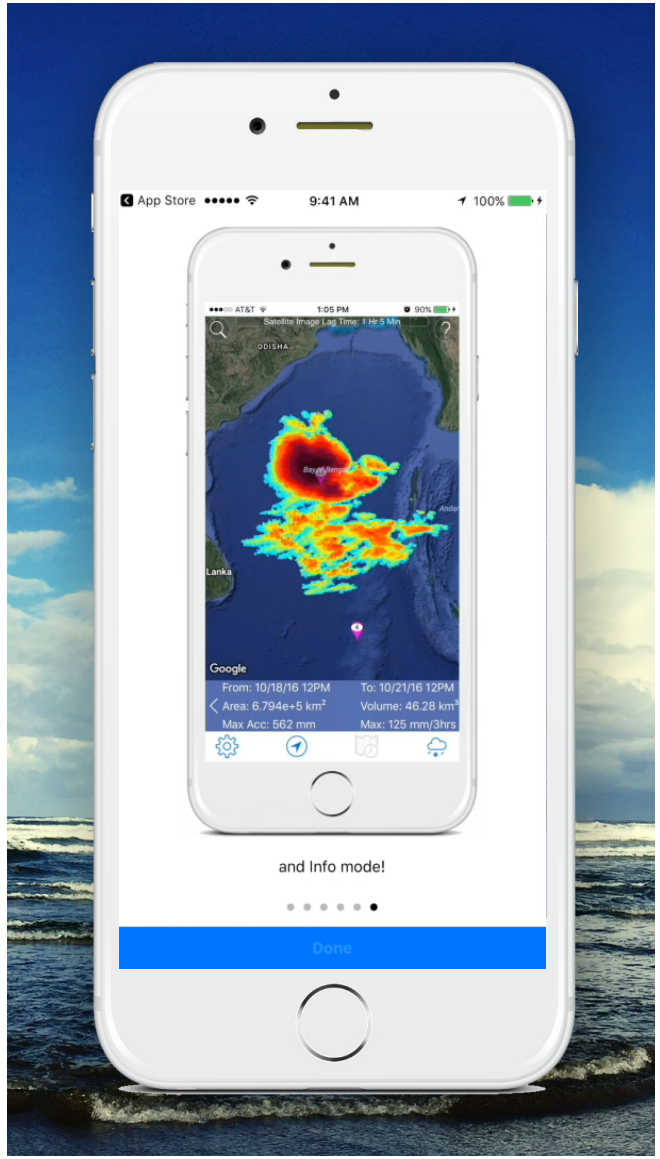


CHRS iRain

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

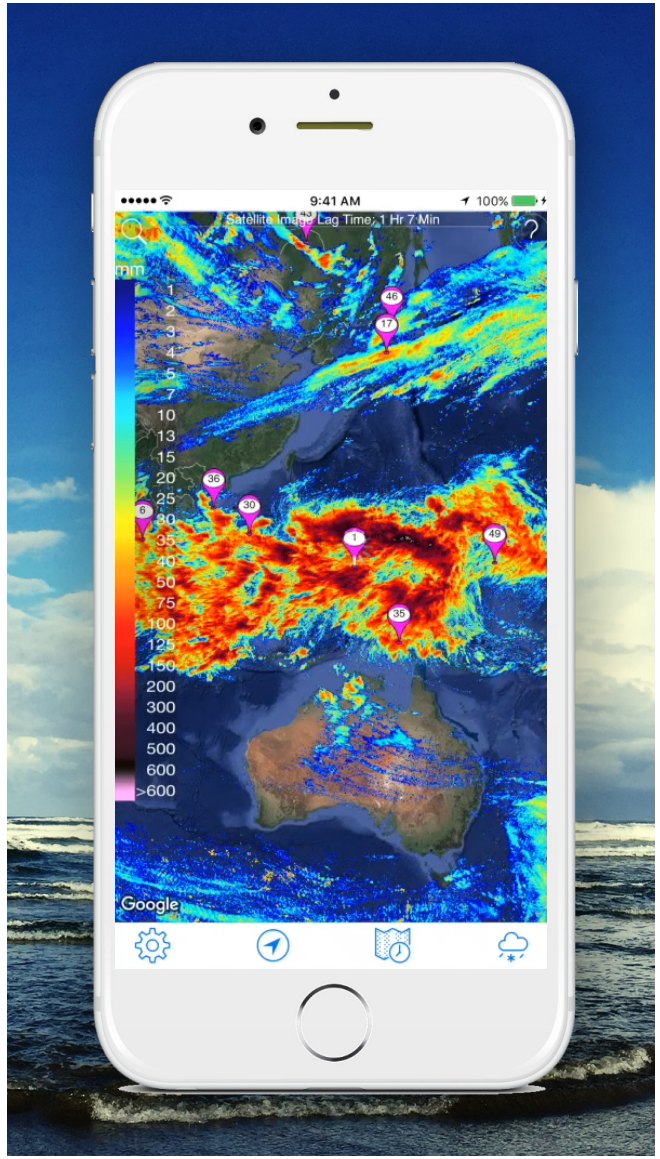


CHRS iRain

An Integrated System for Global Real-time Precipitation Observation

Inspiring research on hydroclimate and water resources

Extreme rainfall event animation

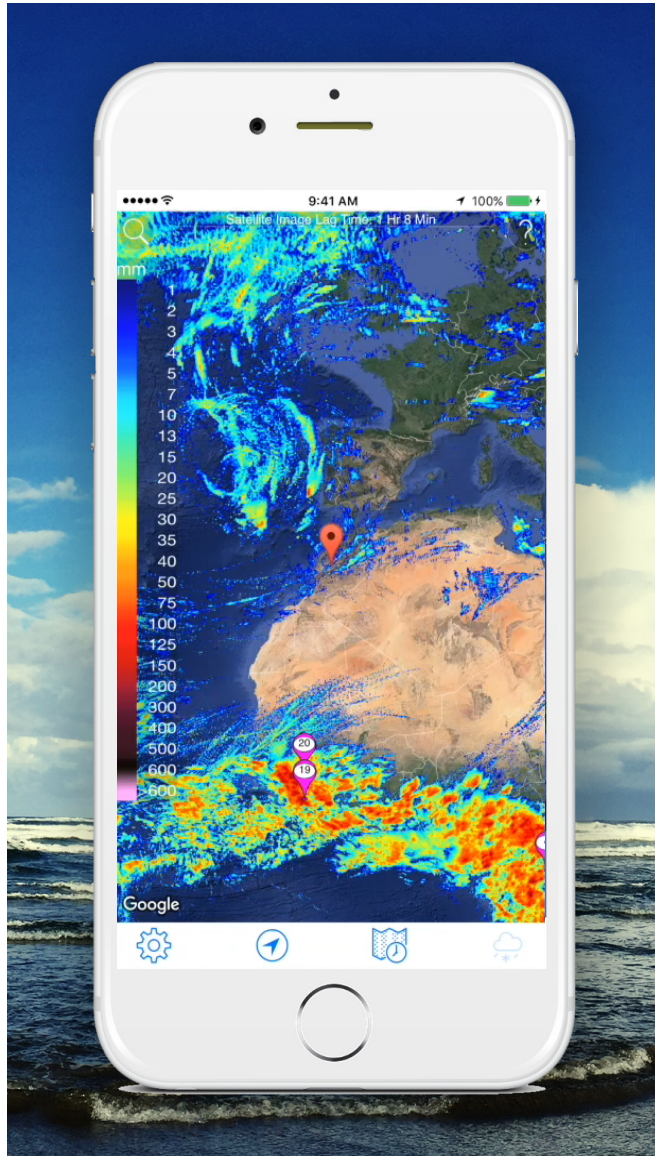


CHRS iRain

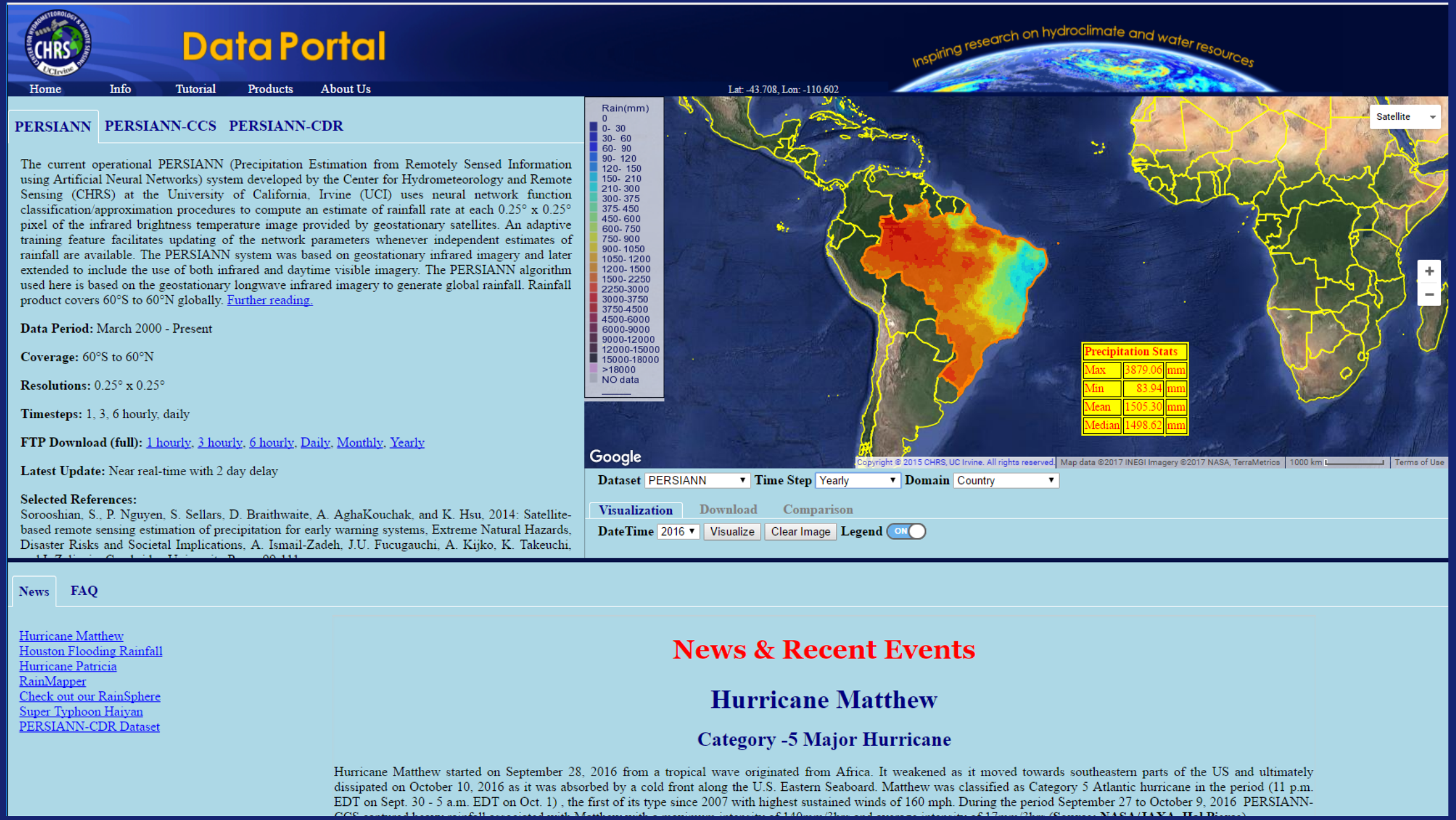
An Integrated System for Global Real-time Precipitation Observation

Inspiring research on hydroclimate and water resources

Report rainfall at your location

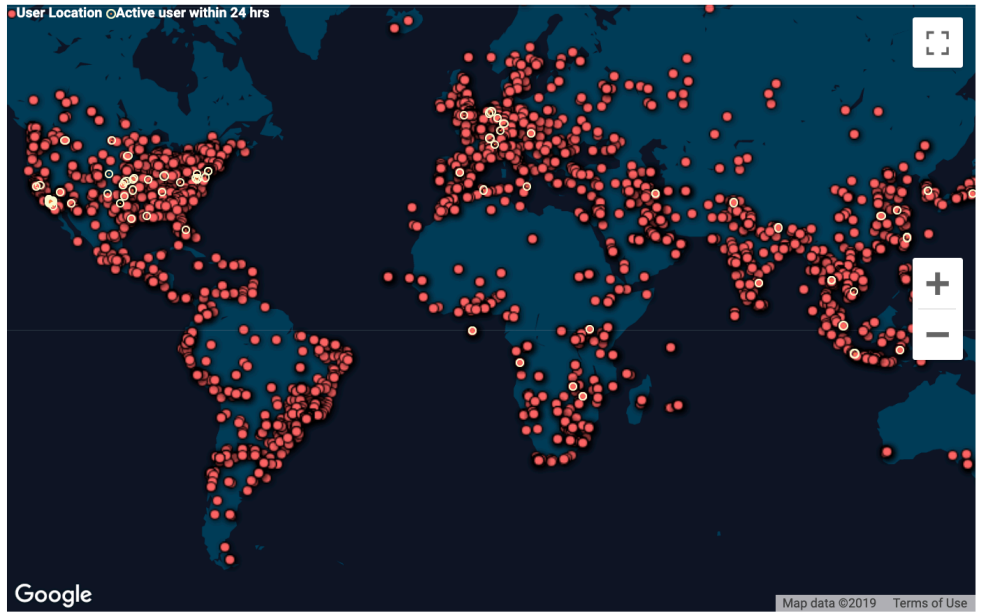


http://chrsdata.eng.uci.edu/



Who uses CHRS's Products?

CHRS User Statistics

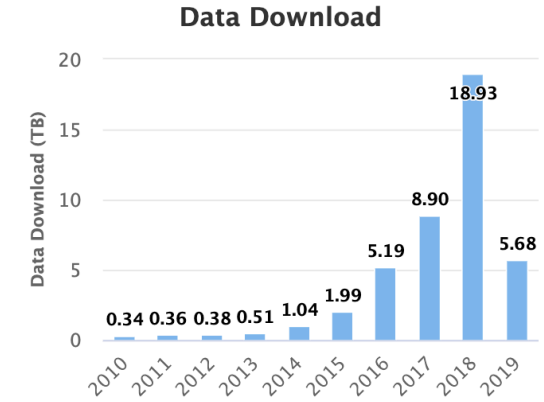


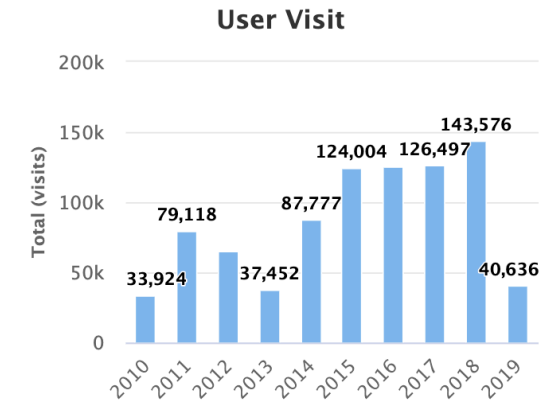
Overall | CHRS Homepage | iRain | RainSphere | Data Portal | CONNECT

Total Visits: 865,008 since 31-Dec-2009
Countries: 205 countries registered

#	Country	Total Visits
1	United States	486,233
2	China	45,341
3	Israel	37,960
4	Thailand	32,211
5	Private IP	27,318
6	France	22,473
7	Iran, Islamic Republic Of	19,232
8	Japan	16,902
9	Germany	14,551

Year | Month





Acknowledgements

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