

PARTNERSHIP FOR  
**RESILIENCE  
& PREPAREDNESS**

# **PREPdata:** Visualizing data to build climate resilience in Uttarakhand

**Emily Nilson**, World Resources Institute

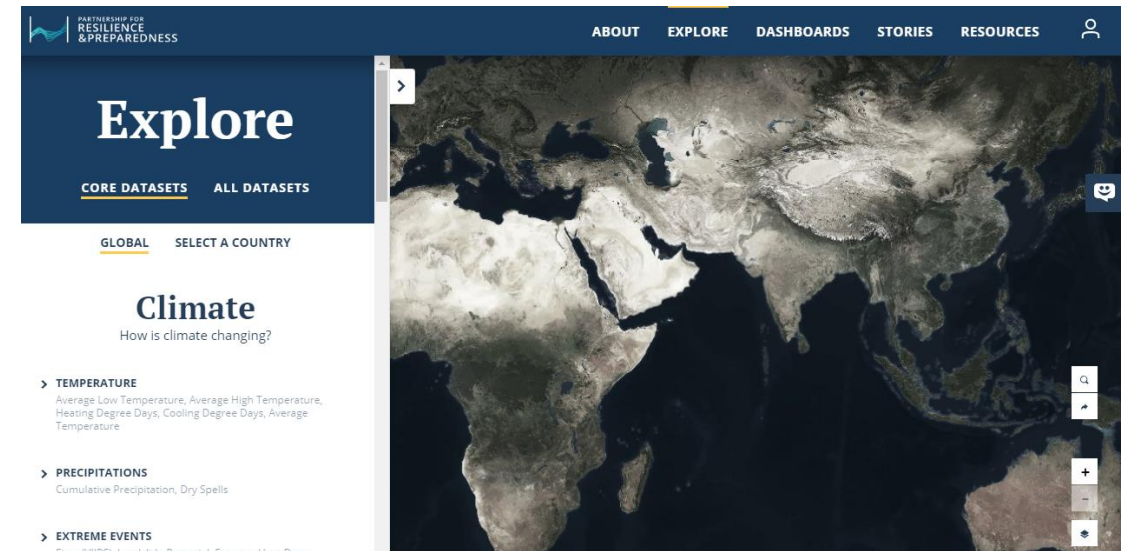
Science and Training Workshop on Climate Change Over the High Mountains of Asia  
8-12 October 2018, Institute of Tropical Meteorology (IITM), Pune

# PREP & PREPdata

## The Partnership



## The Platform





# Building Resilience Through Data

Goal of the public private partnership

*To make it easier for people around the world to find and access data for climate adaptation and resilience planning*

Launched September 2016  
Platform revised in February 2018



# The Partnership

## Coordination & Core



## Public Sector



## NGO & Academia



## Private Sector



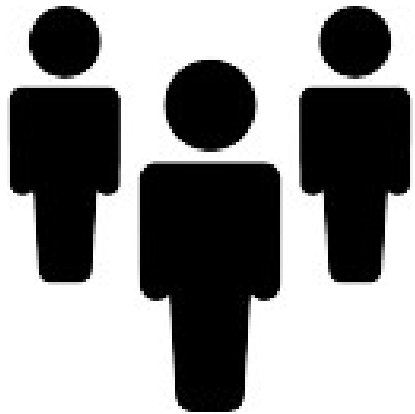
# The Challenges

1. We live in a world of overwhelming data – or sometimes no data at all.
2. We contend with fragmented resources, websites and platforms.
3. We're missing critical feedback mechanisms.
4. Climate datasets are not user-friendly.
5. Data from many sectors are required for resilience planning.

# Who Can Use PREPdata?

## CLIMATE ADAPTATION AND RESILIENCE PRACTITIONERS

Those using data and information to conduct climate risk assessments and create risk management reports



## DATA DEVELOPERS AND INNOVATORS

Those aiming to leverage climate-relevant data to create value-added products and tools to support climate resilience

## DECISION-MAKERS AND POLICY EXPERTS

Those using the risk management information and reports created by the analysts and science translators

# User-Driven Platform Development

- Extensive user needs assessment
- **Identified barriers** to using data for climate adaptation and resilience planning
  - **DATA ACCESS**: difficulty navigating databases, lack of guidance on best-available data, having to go to different platforms to find climate, exposure, and vulnerability data
  - **COMMUNICATION**: desire for data visualization and storytelling tools to aid in communicating the value of climate adaptation

# PREPdata Features

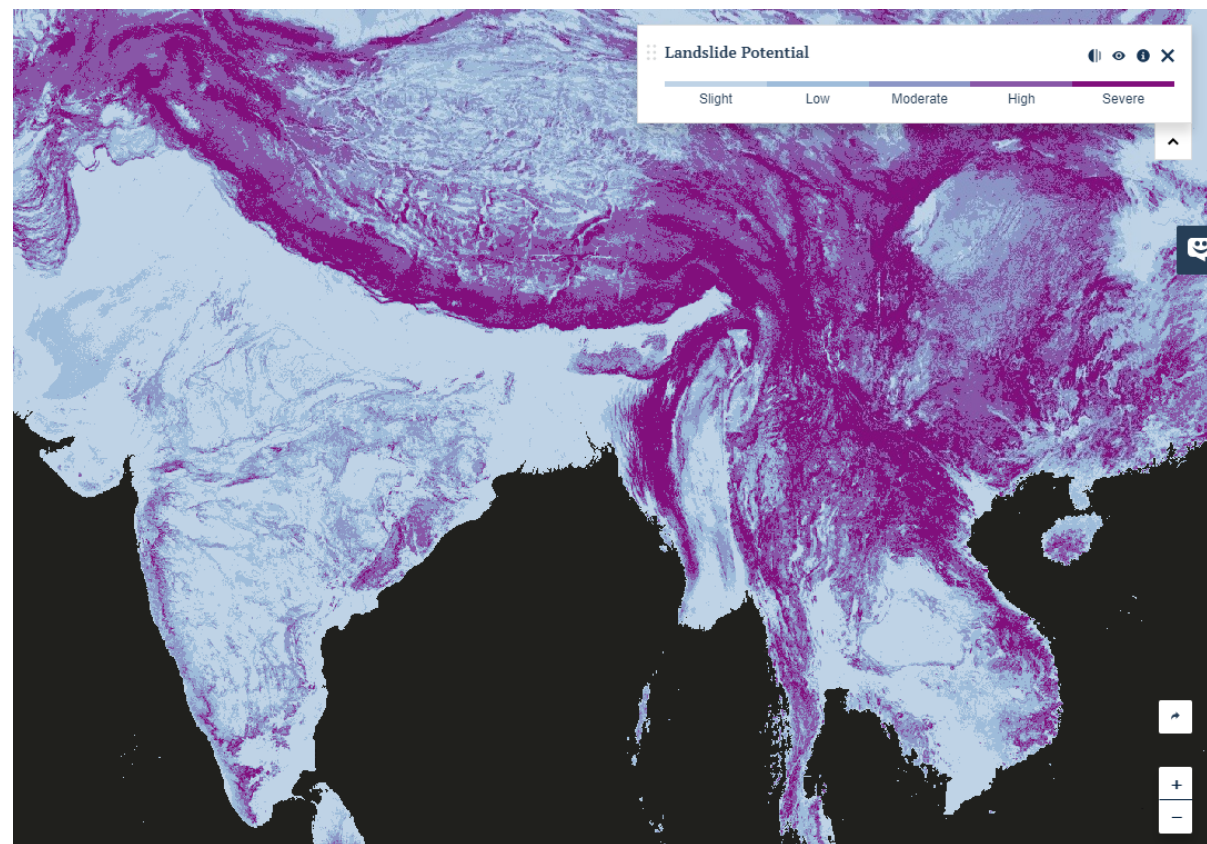
**EXPLORE** | Find, visualize, and overlay datasets

**INTERACT** | Create and share custom graphs and charts

**CUSTOMIZED DASHBOARDS** |  
Monitor indicators of interest for specific geographies

**STORIES** | Share insights and use case studies with global community

**RESOURCES** | Find a variety of climate resources





# What PREPdata is (and isn't)

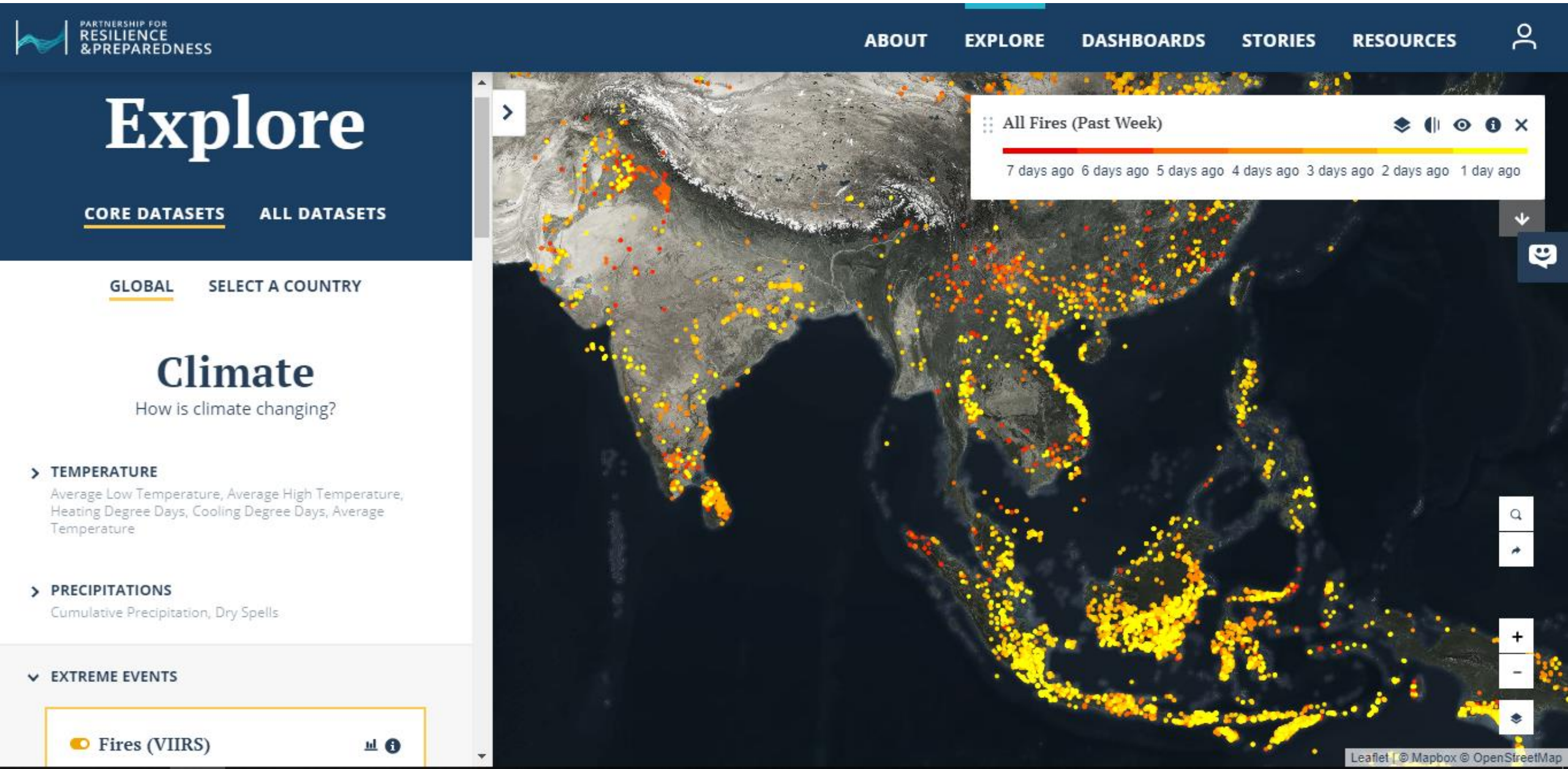
## It is...

- A tool to **discover, access and visualize** curated climate, physical, and socioeconomic data in one place
- **Interoperable** with other platforms and data products
- Adaptive to **user needs**
- A tool to track indicators and **communicate** climate adaptation and resilience


## It isn't...

- A policy- or decision-making tool
- An analytical tool

# Explore: Discover climate, physical, and socioeconomic data



# Explore: Discover climate, physical, and socioeconomic data



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ABOUTEXPLOREDASHBOARDSSTORIESRESOURCES

# Explore

CORE DATASETSALL DATASETS

GLOBALSELECT A COUNTRY

## Climate

How is climate changing?

> TEMPERATURE

Average Low Temperature, Average High Temperature, Heating Degree Days, Cooling Degree Days, Average Temperature

> PRECIPITATIONS


Cumulative Precipitation, Dry Spells

> EXTREME EVENTS

Fires (VIIRS), Landslide Potential, Flood Risk, Extreme Heat Days, Extreme Precipitation Days

> COASTAL RISK

Projected Sea Level



A world map with a grid overlay, showing climate data. The map is centered on the Atlantic Ocean, with North and South America on the left and Europe and Africa on the right. A hand cursor is visible over the Atlantic Ocean. A search bar and navigation controls are on the right side of the map.

Leaflet | © Mapbox © OpenStreetMap



# Interact: Create and share custom maps, graphs, and charts

### Customize Visualization

Chart

Map

Table

Chart style

Bar (vertical) x ▾

Drag and drop elements from the list to the boxes:

County X

# EPA R... X

State X

# Risk S... X

# Gover... X

# Built E... X

# Natur... X

# Social X

Labels 

County X

Values 

# CRSI Score X ⚙

Filter by value 

Drop here

Filter by area 

Select area ▾

Order 

Drop here


Max rows 

10

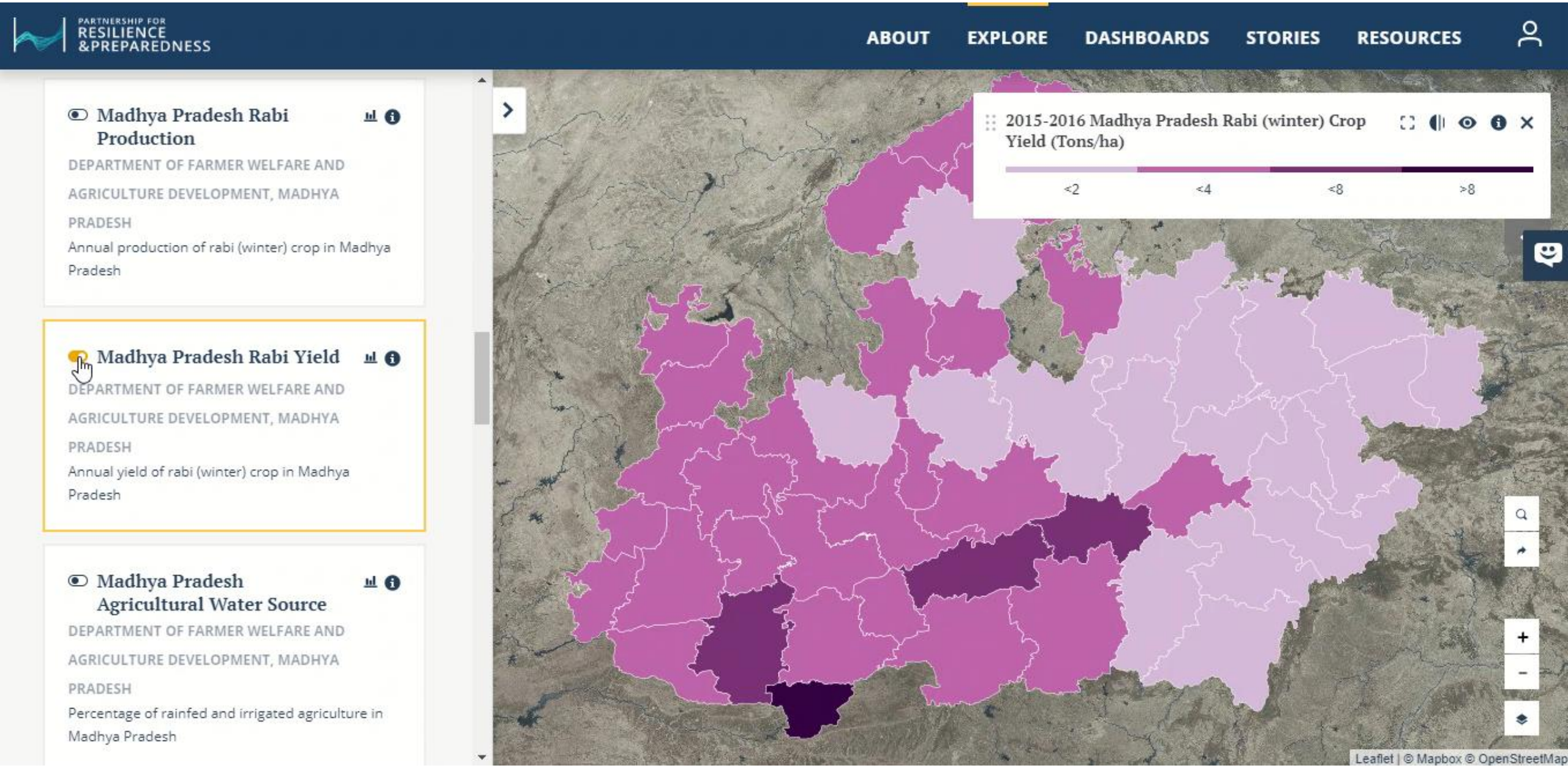
NEED HELP?

Climate Resilience Screening Index:  
Top-Scoring U.S. Counties

County	CRSI Score
Kodiak Island	225
Ketchikan Gateway	165
North Slope	150
Hancock	62
Waldo	44

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# Interact: Create and share custom maps, graphs, and charts





# Customized Dashboards: Data and indicators for climate resilience

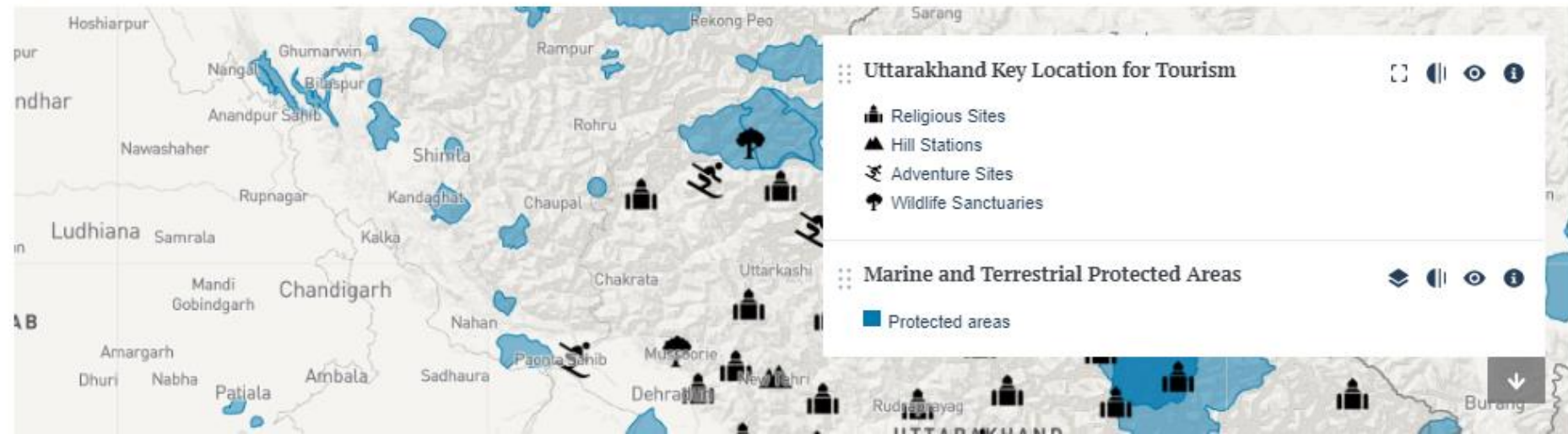
## Uttarakhand Tourism

✦ SHARE    DOWNLOAD AS PDF

### Tourism in Uttarakhand

Tourism plays a prominent role in Uttarakhand's economy. The draw of the Himalayas, the beauty and cool relief of hill stations, and the wealth of Hindu religious pilgrimage sites are a part of the attraction. Corbett Tiger Reserve and the hill stations of Nainital, Mussoorie, Almora, Kausani, Bhimtal and Ranikhet are amongst the most frequented destinations of India.

#### Types of Tourism





# Stories: Spotlight climate-related risks and solutions

## Extreme Weather in the Sonoma Region

The region has historically experienced severe storms, floods, droughts, heat waves, and fires, but the severity and frequency of these events and related impacts are increasing.

Understanding how these hazards are changing and making informed decisions about them will keep our communities vibrant and resilient.



# Resources: Adaptation data portals, platforms, and information

## Understanding Climate Change Impacts



### Asia Pacific Adaptation Network (APAN)

APAN is a regional program providing project case studies of how countries, particularly communities, prepare for different climate hazards, with links to tools.

[HTTP://WWW.ASIAPACIFICADAPT.NET/ABOUT-US](http://www.asiapacificadapt.net/about-us)



Department of Science & Technology  
Ministry of Science & Technology  
Government of India

**NMSHE** NATIONAL MISSION FOR  
SUSTAINING THE HIMALAYAN  
ECOSYSTEM

### Himalayas Climate Change Portal

Knowledge portal on National Mission for Sustaining the Himalayan Ecosystem provides access to ongoing programmes and resources.

[HTTP://KNOWLEDGEPORTAL-NMSHE.IN/](http://knowledgeportal-nmshe.in/)



### IPCC 5th Assessment Report

One of the premier and most comprehensive documents for assessing the science related to climate change, covering causes, impacts and possible response strategies.

[HTTP://WWW.IPCC.CH/REPORT/AR5/](http://www.ipcc.ch/report/ar5/)

# Climate Data: Downscaled Climate Projections

Downscaled climate scenarios with projections for two greenhouse gas emissions scenarios: RCP 4.5 and RCP 8.5.

**Max. Temperature**  
**Min. Temperature**  
**Precipitation**



NASA Earth  
Exchange Global  
Daily Downscaled  
Projections  
(NEX-GDDP)

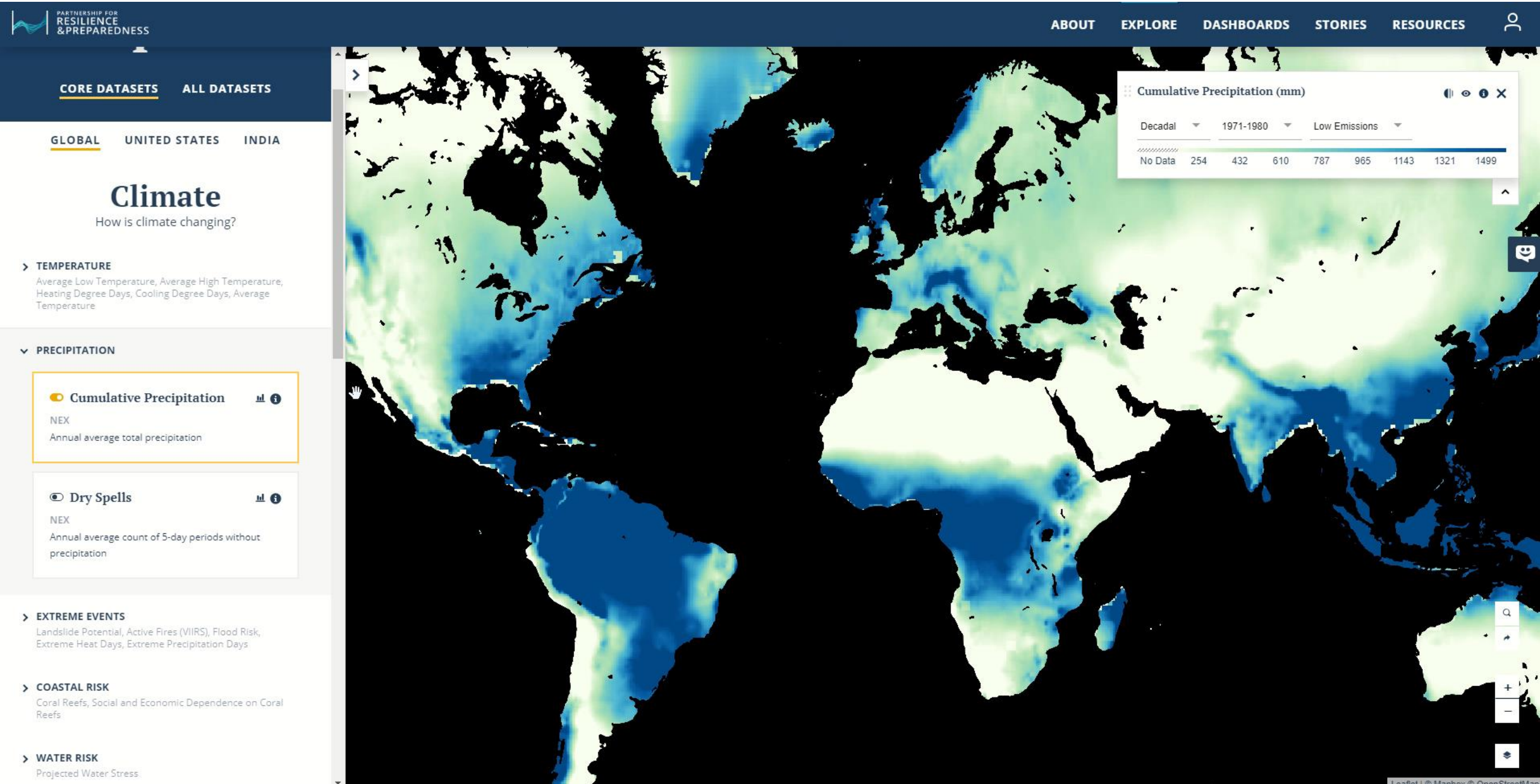
Localized  
Constructed Analogs  
(LOCA)



Average Temperature  
Average High Temperature  
Average Low Temperature  
Cooling Degree Days  
Heating Degree Days  
Frost Free Season  
Extreme Heat  
Cumulative Precipitation  
Extreme Precipitation  
Dry Spells



# Downscaled Climate Data: Derived Indicators from NEX-GDDP



# What Makes PREPdata Unique?

- A specific focus on climate resilience data
- Visual, map-based platform that is user-friendly and customizable to different contexts and skill levels
- Active curation of data sets
- Commitment to global coverage
- A user-needs based strategy for platform development
- Diverse group of partners

# PREP India

- Indo-US Partnership for Climate Resilience
- US Department of State Funding (through NC State University / CICS – Cooperative Institute for Climate and Satellites)
- Pilot applications in two states
  - Madhya Pradesh
  - Uttarakhand





# PREPdata Engagement Process

<b>1. Partner Identification</b>	Identifying primary stakeholders
<b>2. User Needs Assessment</b>	Understanding barriers to better climate risk and adaptation planning; identifying data needs and holdings
<b>3. Data Prioritization</b>	Identifying relevant datasets for each sector, requesting and collecting data
<b>4. Data Registration</b>	Processing data, documenting metadata, and uploading data to platform
<b>5. Dashboard Development</b>	Creating dashboards for each sector
<b>6. Testing and Review</b>	Sharing data visualizations and dashboards with stakeholders for review and feedback
<b>7. Capacity Building</b>	Training end-users through workshops and one-on-one sessions

# PREP India: Partners and Data Providers

## Coordinators



WORLD  
RESOURCES  
INSTITUTE



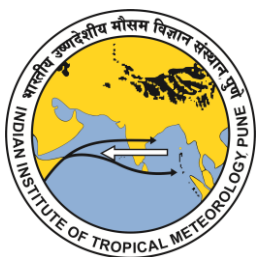
WRI INDIA



**ACCLIMATISE**  
building climate resilience

**futureearth**  
research for global sustainability

## Additional Data Providers



## Madhya Pradesh & Uttarakhand Sectoral Agencies



- MP State Knowledge Management Centre on Climate Change, (EPCO/SKMCCC)
- UK State Climate Change Cell (SCCC)



- Council of Science & Technology
- Department of Farmer Welfare & Agriculture
- Water Resources Department

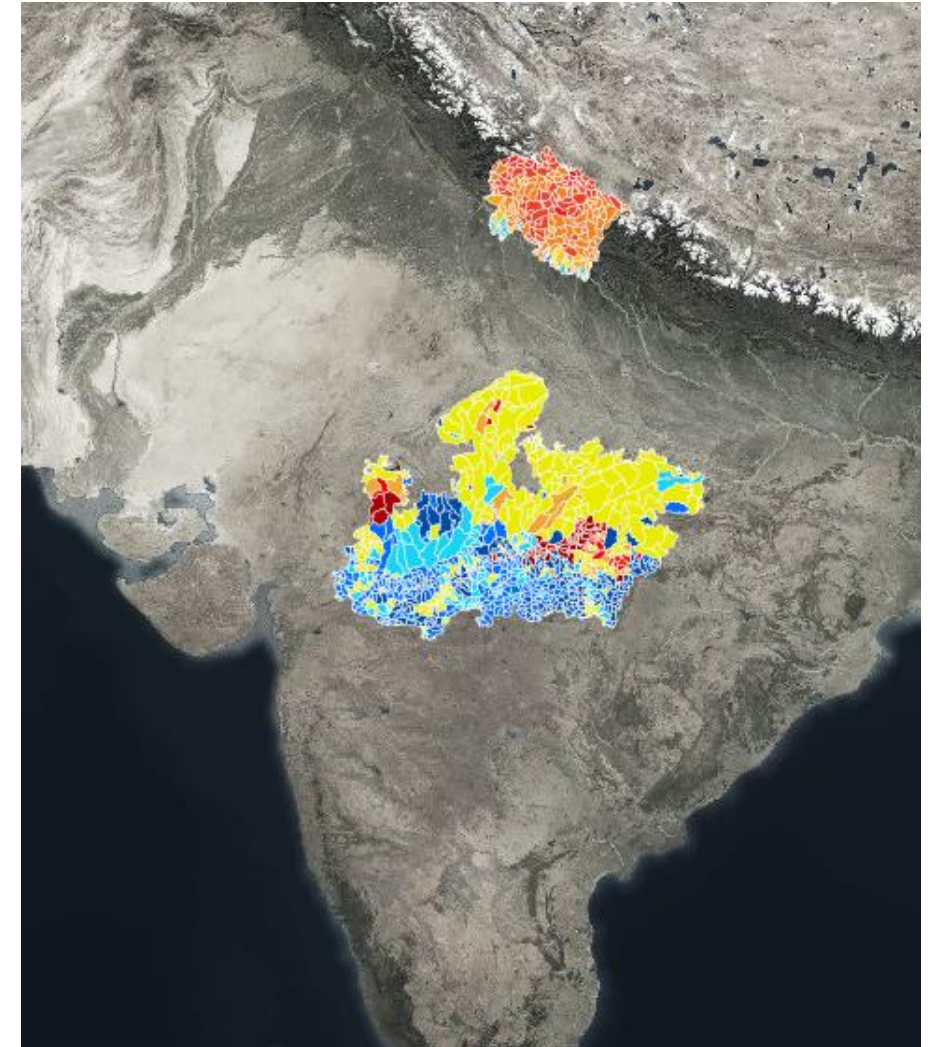
# PREP India: User Needs Assessment

- Data barriers:
  - Accessing relevant data (acquisition from government agencies)
  - Incompleteness or lack of data quality
  - Difficulty processing the data
- General barriers:
  - Communicating the importance of adaptation and climate impacts
  - Communicating results to decision-makers



# PREP India: Purpose

- Pilot PREPdata
- Bring together data from different sectors
- Help the states mainstream their state climate action plans and related data
- Give sectoral agencies better access to data and Vulnerability and Risk Assessment (VRA) results




# PREP India: Uttarakhand Profile

- Identified climate vulnerable sectors are agriculture, water, and tourism
- Key hazards include landslides and flooding
- Currently do not have a platform to disseminate climate data across sectors



# Uttarakhand Data



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# Explore

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# Uttarakhand Dashboards

[ABOUT](#)[EXPLORE](#)[DASHBOARDS](#)[STORIES](#)[RESOURCES](#)

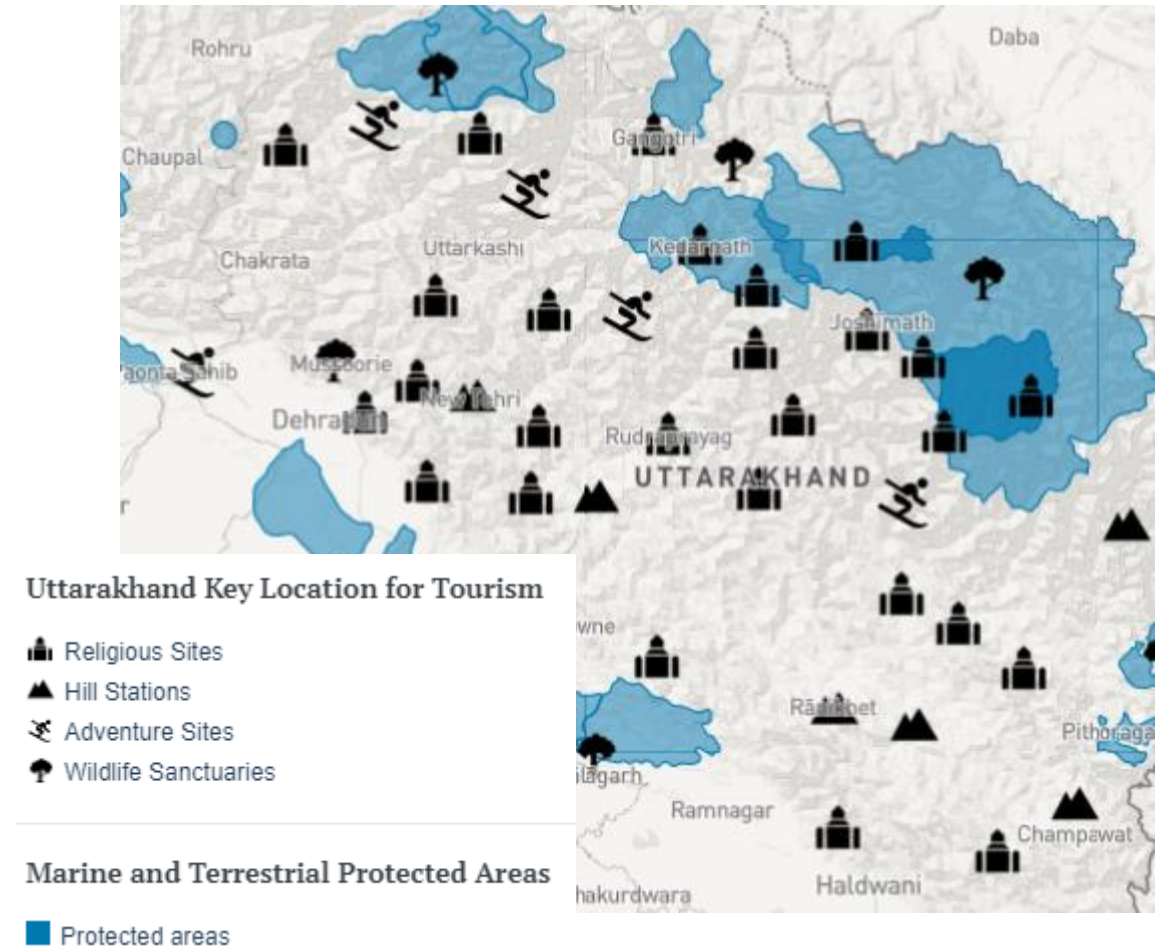
## Dashboards

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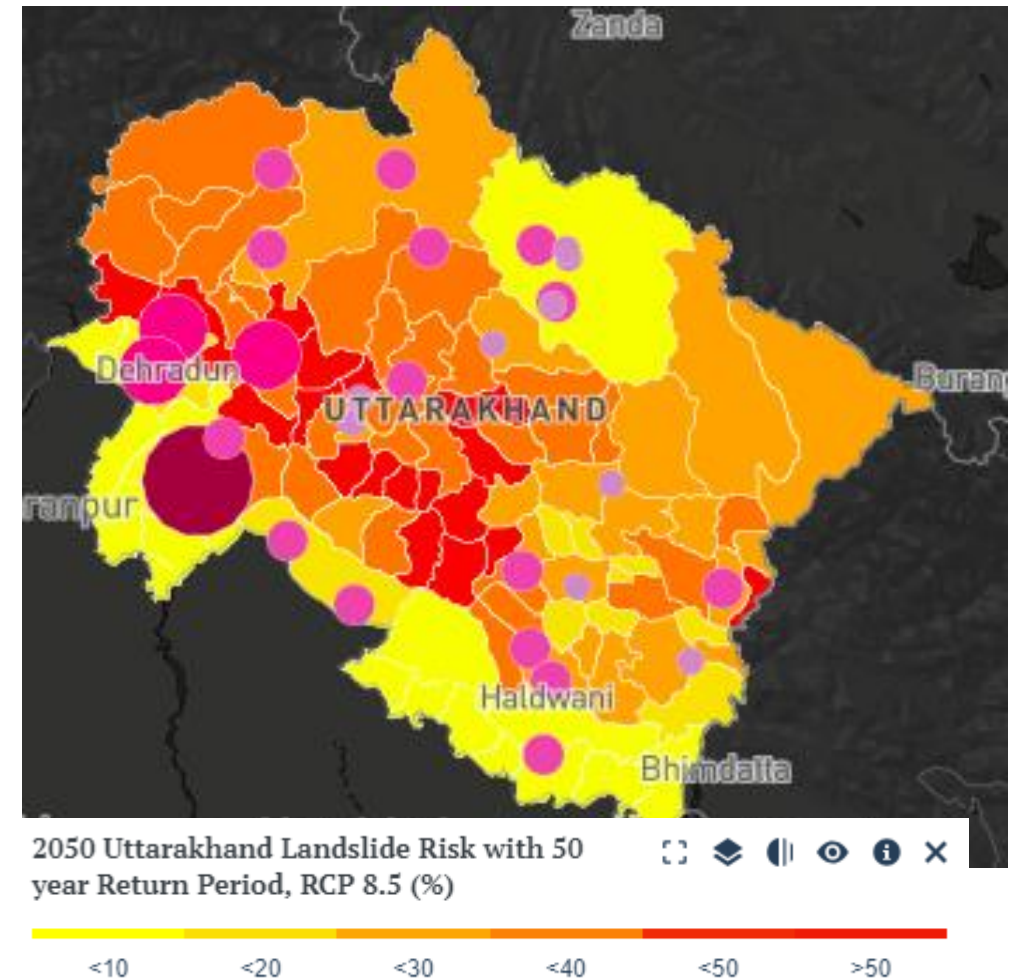
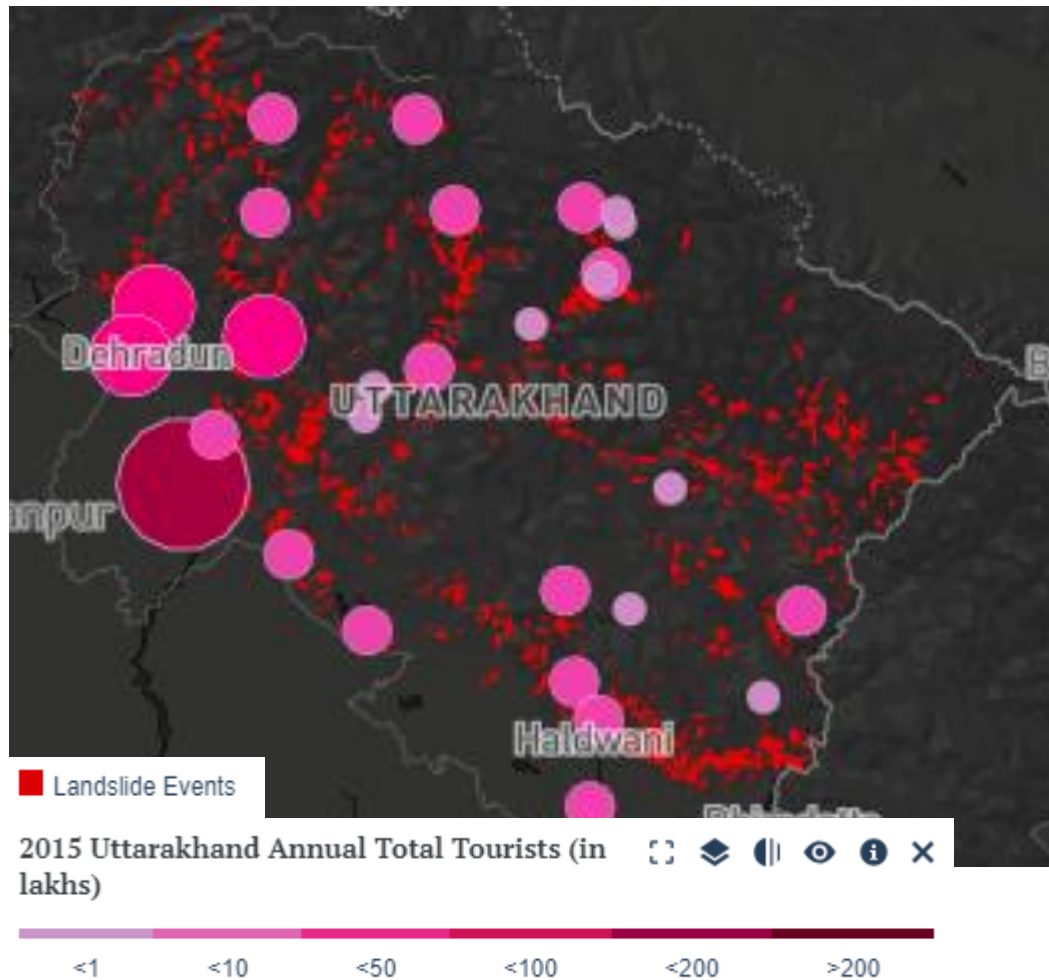


# Uttarakhand Dashboard: Tourism

- Contributes ~4.4% to state GDP
- Employs over 2% state's population
- Types of tourism: leisure, religious, adventure
- Total tourists doubled between 2000 and 2015
- Tourism linked to natural resources: mountains, snow, rivers, forests, biodiversity

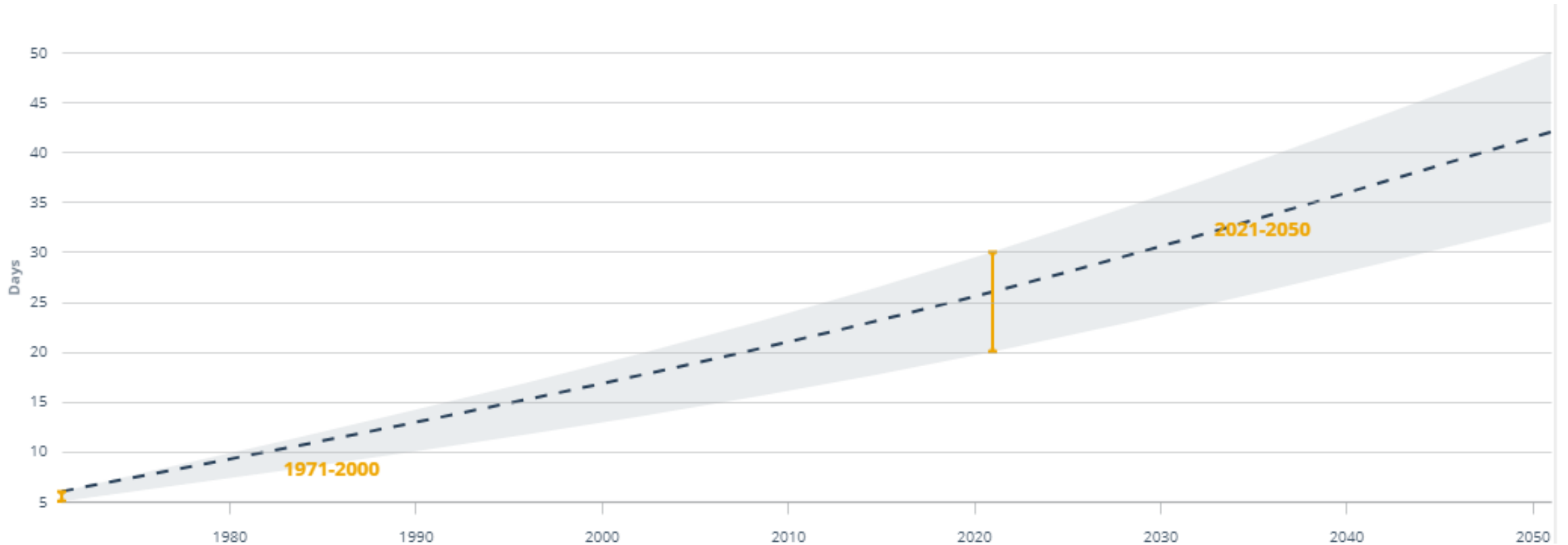


# Uttarakhand Landslides & Tourism



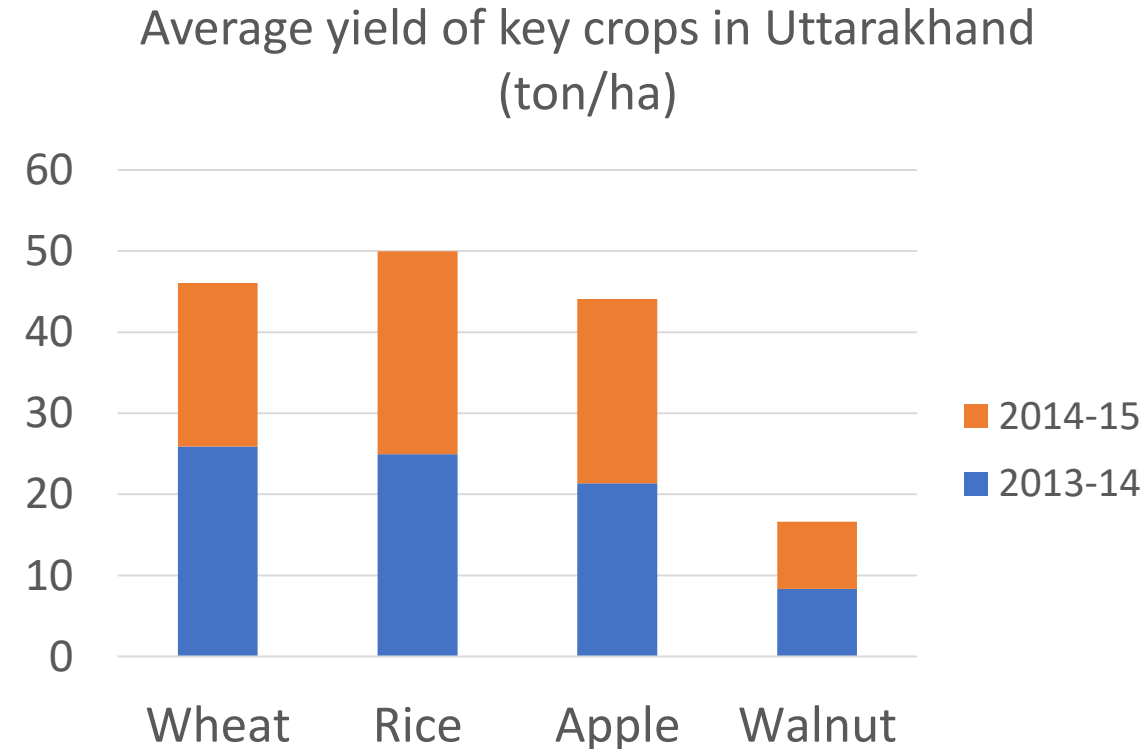


# Climate Indicator: Change in Extreme Heat Days



# Uttarakhand Dashboard: Agriculture

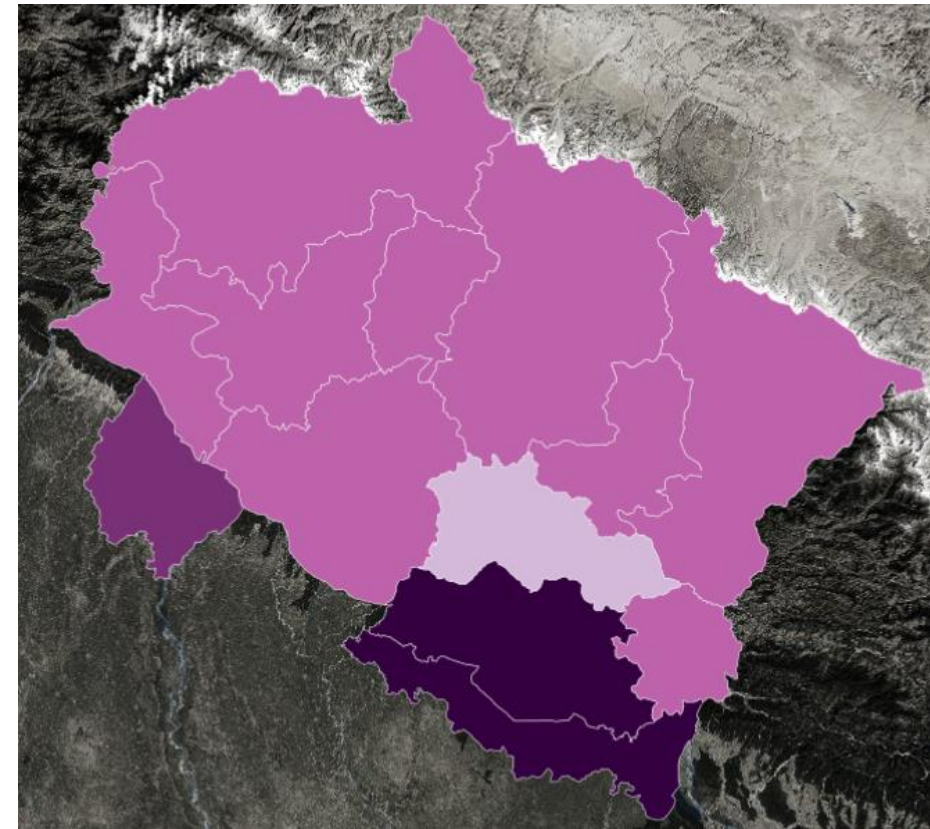
- Contributes ~11% to state GDP
- Employs over 70% state's population
- Commercial agriculture in plains; subsistence farming in hills
- Hill districts dependent on rain-fed agriculture



# Uttarakhand Wheat Area and Yield



2015-2016 Uttarakhand Area under Wheat Cultivation (%)

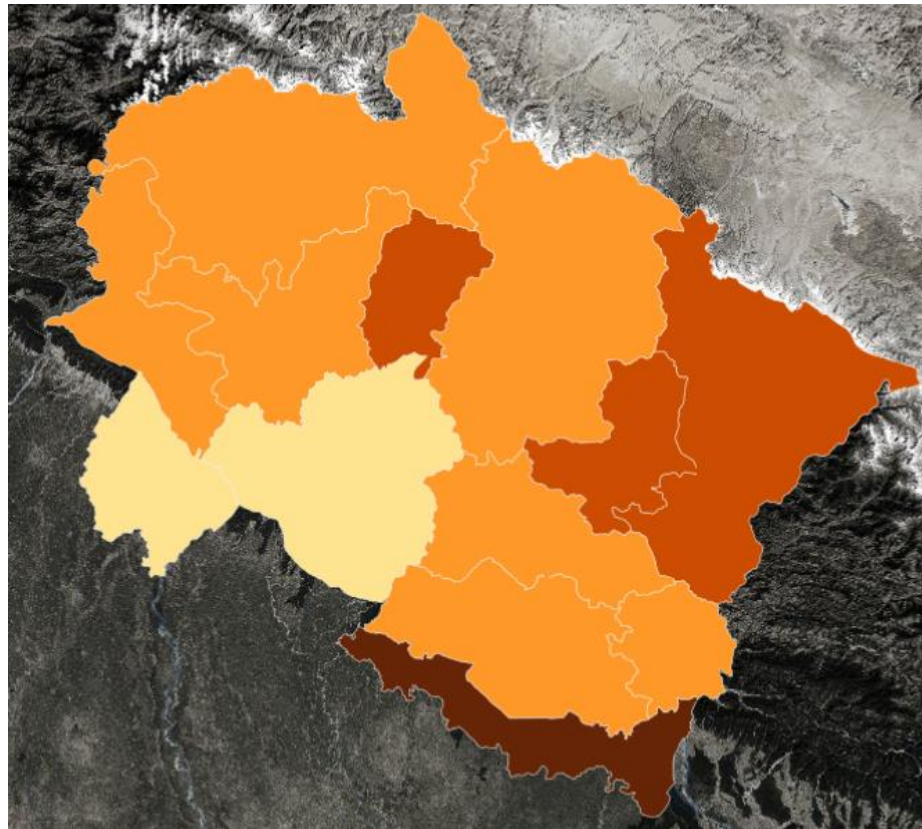


2015-2016 Uttarakhand Wheat Yield (Tons/ha)

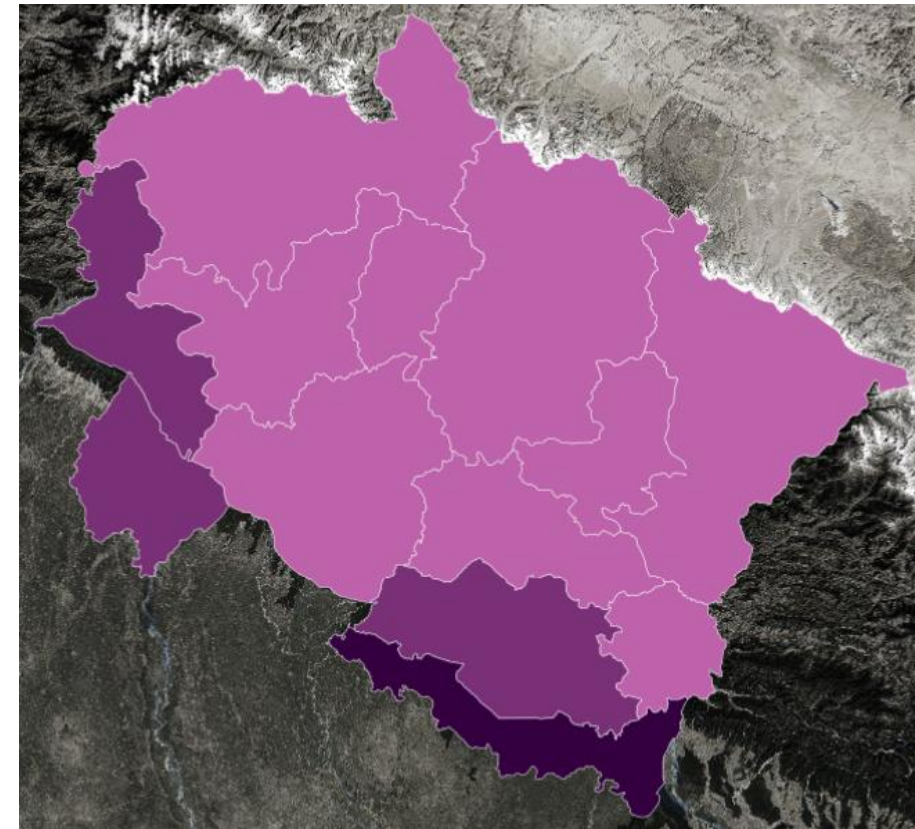




# Uttarakhand Paddy Area and Yield



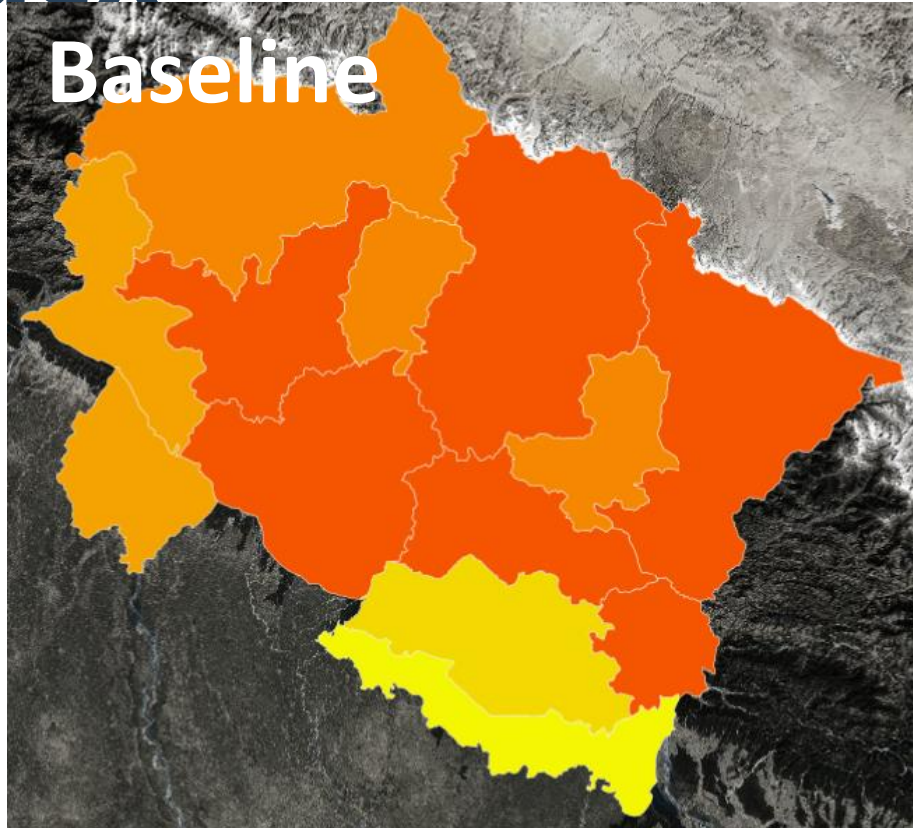
2015-2016 Uttarakhand Area under Paddy Cultivation (%)



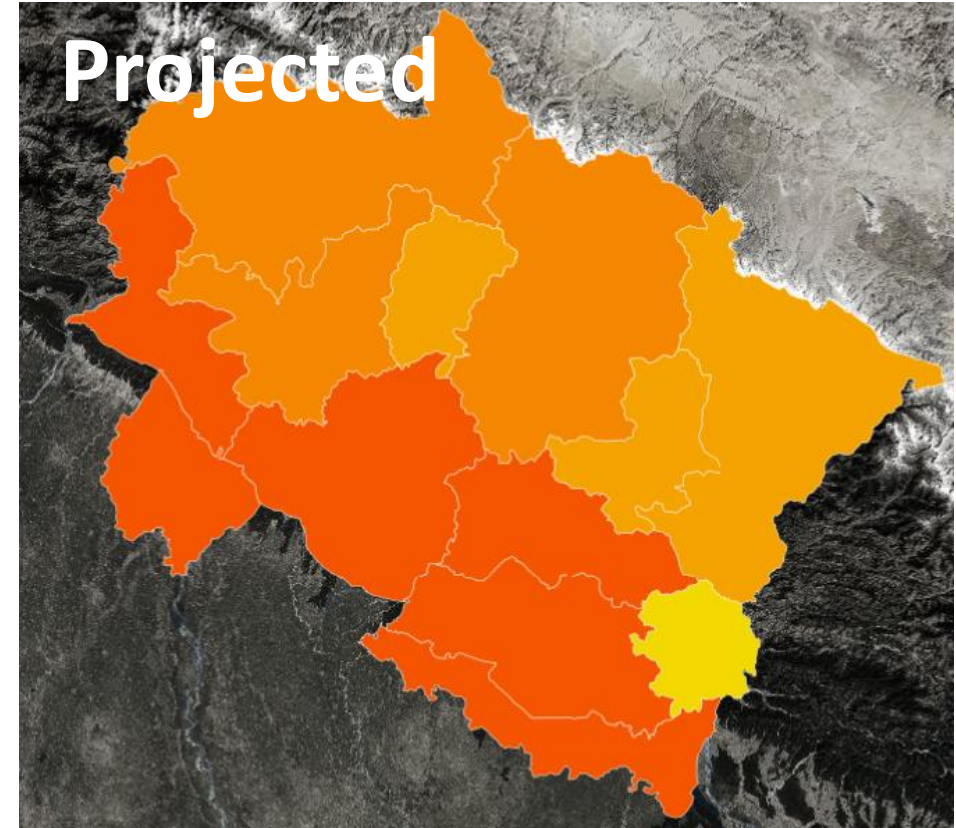
2015-2016 Uttarakhand Paddy Yield (Tons/ha)



# UK Water Resources Vulnerability Index



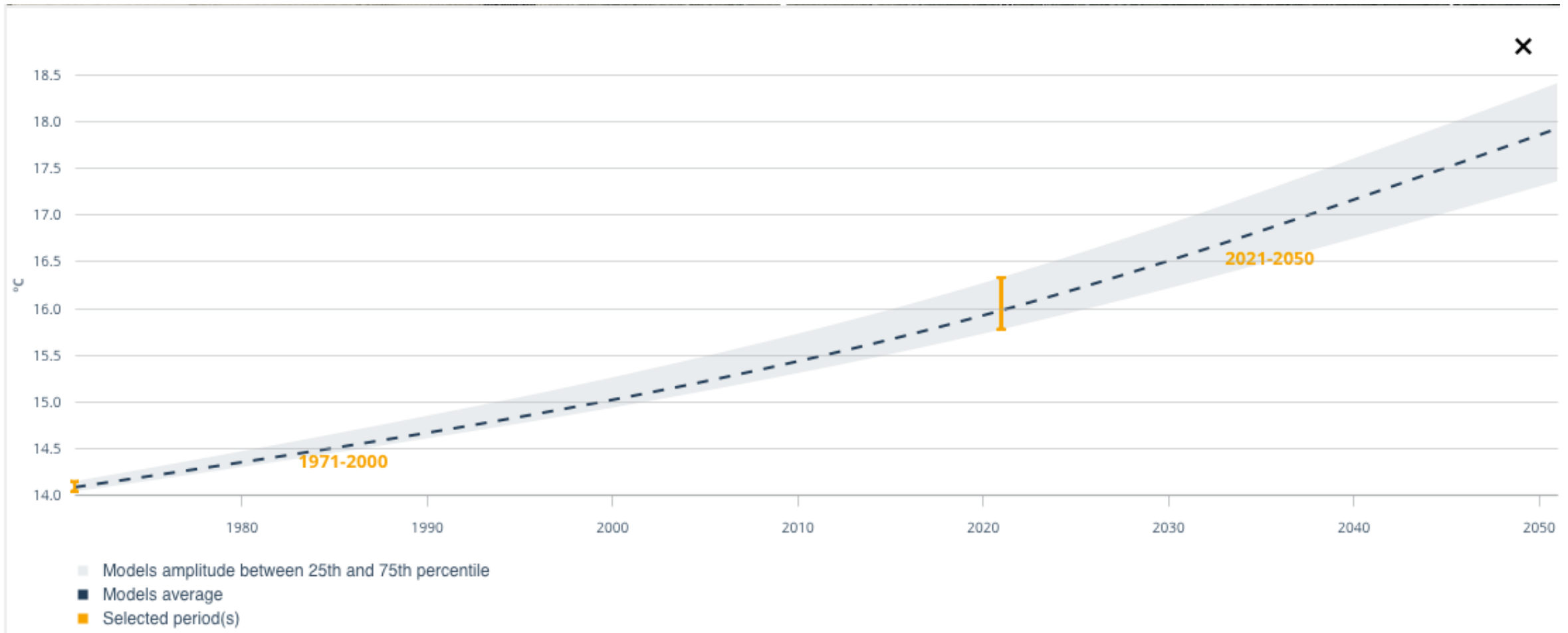
Uttarakhand Water Resources Vulnerability Index (WRVI) under Baseline



2050 Uttarakhand Water Resources Vulnerability Index (WRVI), RCP 4.5



# Climate Indicator: Change in Avg. Temperature





# Uttarakhand Workshop, August 2018

- Forest Department, Dehradun
- Organized by State Climate Change Centre (SCCC), Uttarakhand in partnership with WRI, Acclimatise, and Future Earth
- 28 participants, including government officials, members of civil society organizations, private sector and media
- Subsequent one-on-one training sessions with government departments



# PREP India: Outcomes

- Increased access and usability of data
  - Multiple sectors
  - Vulnerability and Risk Assessment
- Mainstreamed use of climate data
- Improved climate adaptation data access for state climate cells
  - National Mission on Strategic Knowledge for Climate Change
  - Platform embedded on their websites
- Additional states in India have requested similar PREP data applications

# Madhya Pradesh Climate Change Knowledge Portal



## Madhya Pradesh Climate Change Knowledge Portal

[Knowledge Bank](#)[Analytics](#)[Discussions](#)[Research & Training](#)[Kid's Corner](#)

[Home](#) / [Knowledge Bank](#) / [SKMCCC Knowledge Resources](#)

### SKMCCC Knowledge Resources

#### WATER RISK

##### Madhya Pradesh Change in Surface Runoff

MADHYA PRADESH SKMCCC

Annual projected change in surface runoff in Madhya Pradesh

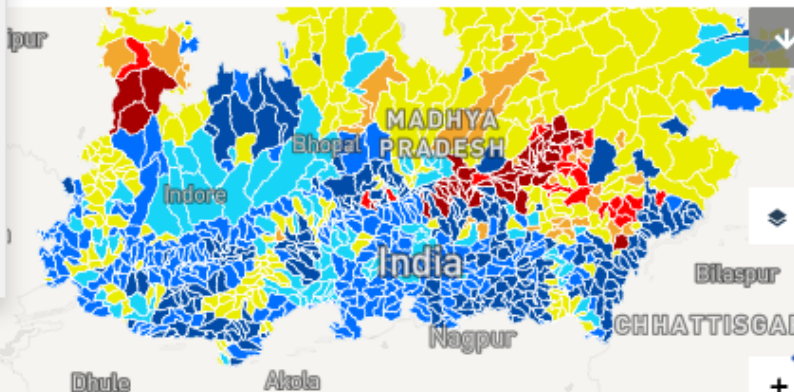
##### Madhya Pradesh Change in Ground Water Recharge

MADHYA PRADESH SKMCCC

Annual projected change in groundwater recharge in Madhya Pradesh

Madhya Pradesh Annual Change in Ground Water Recharge from Baseline, RCP

Significant Decrease No Increase Significant Very Significant Decrease Significant Increase Significant Increase

[Case Studies](#)[Policy Briefs](#)[Research Reports](#)[Publications](#)[Proceedings](#)[More Resources](#)

Climate Change Information System (CCIS)





# What's next for PREP?

- Potential applications in additional states in India
- Planning regional applications in Africa
- Expanding data collection
- Improving interoperability
- More partners contributing data and tools





# Thank you!

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