Earth Blox demo
for
STRATA
Earth Stress Monitor

Crisis Management Branch, United Nations Environment Programme

29 September 2020

UNEP Project team:

David Jensen, Head of Policy and Innovation

Marie Schellens, Environmental Security Analyst

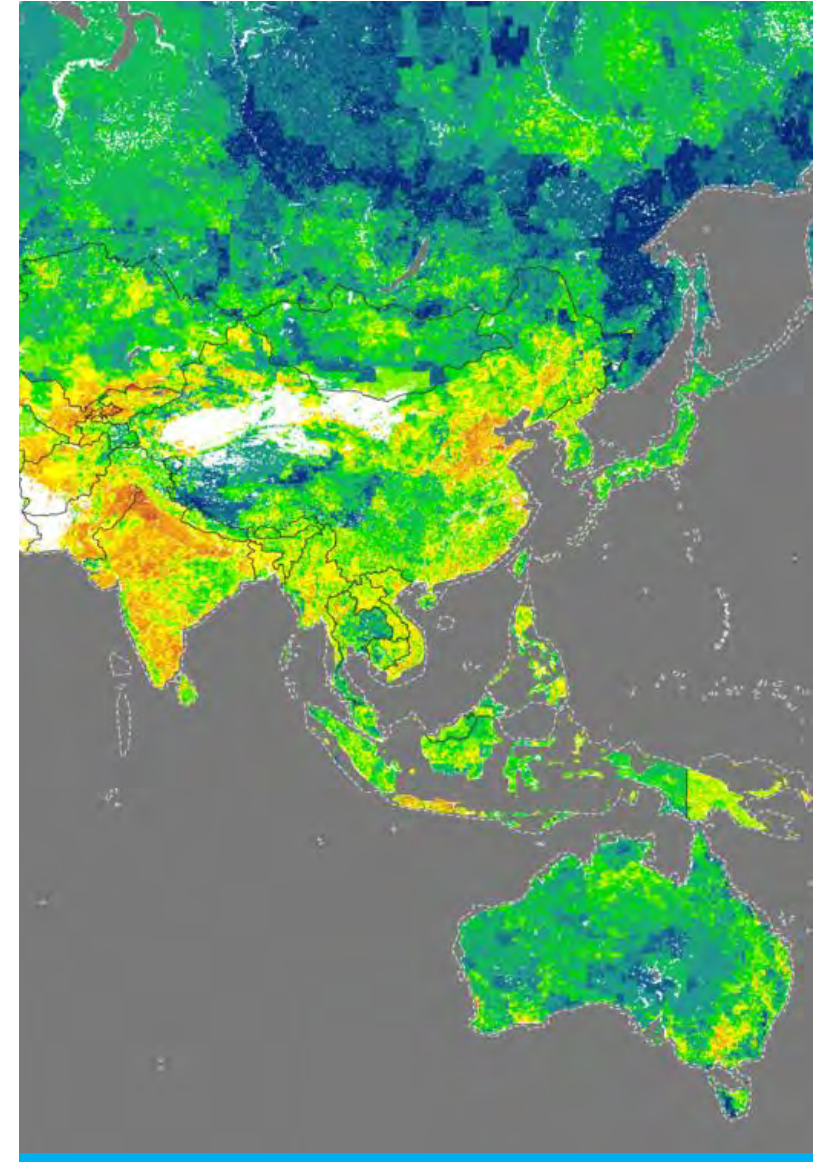**Albert Martinez,** Climate Security Analyst

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University of Edinburgh

STRATA – Earth Stress Monitor

Overview.

1. **UNEP:** Brief overview of the vision of STRATA

2. **Earth Blox:** Demo of functionalities

3. **University of Edinburgh:** Brief vision of scientific implementation
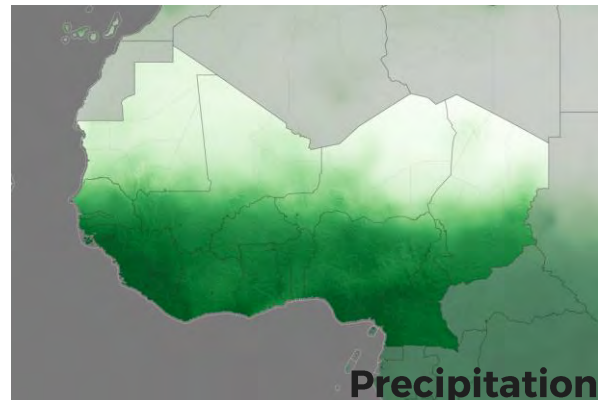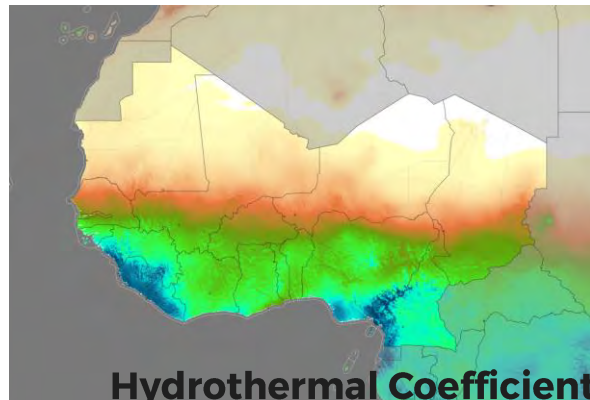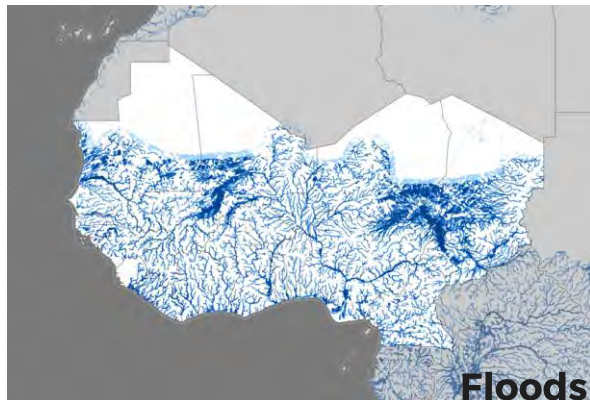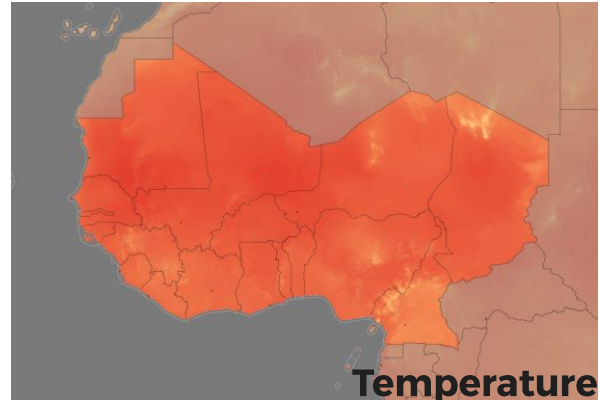
4. **Q&A:** facilitated around key topics

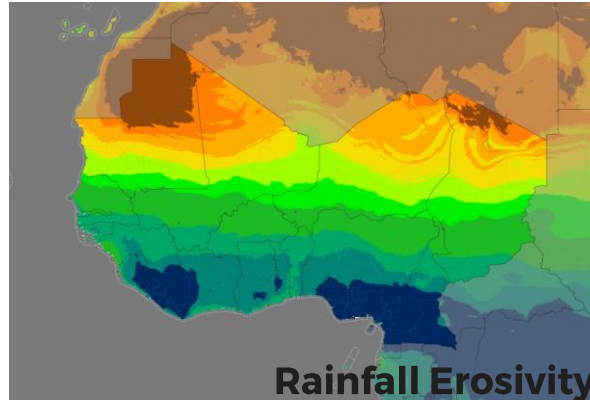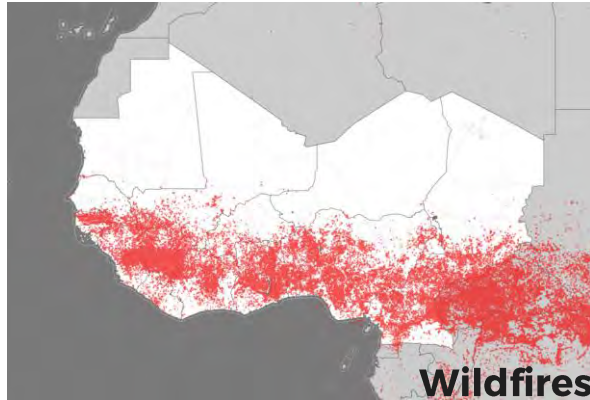STRATA – Earth Stress Monitor

Our objectives.

1. **Identify hotspots where environment and climate stress converge over time and space**

2. **Quantify environmental stress overlap with structural risks to assess impacts on livelihoods**

3. **Inform end-users with potential climate change adaptation and resilience-building solutions**
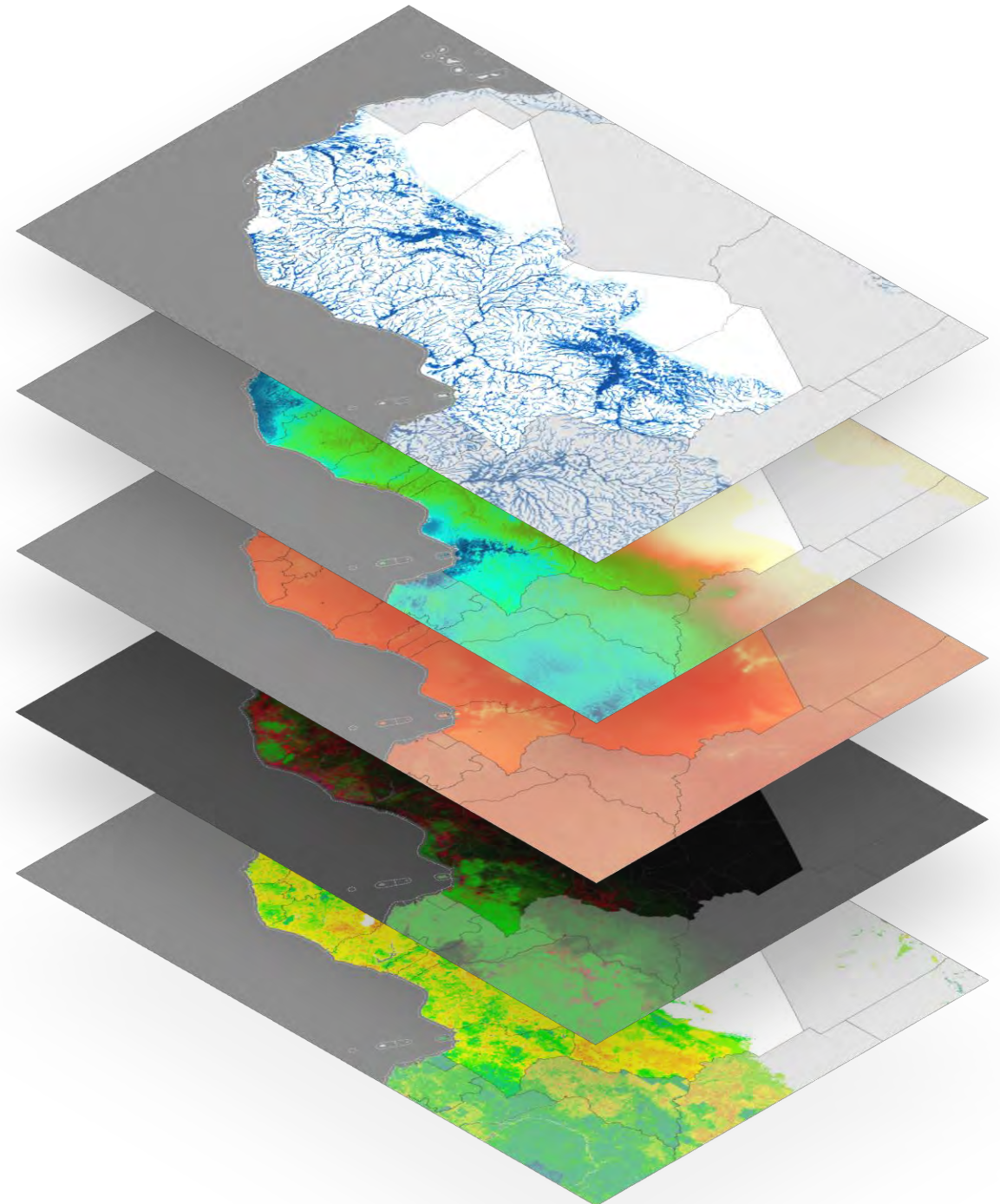
Making sense of complexity.

From statistics to risks and actions

STRATA – Earth Stress Monitor

Wildfires

Rainfall Erosivity

Temperature

Floods

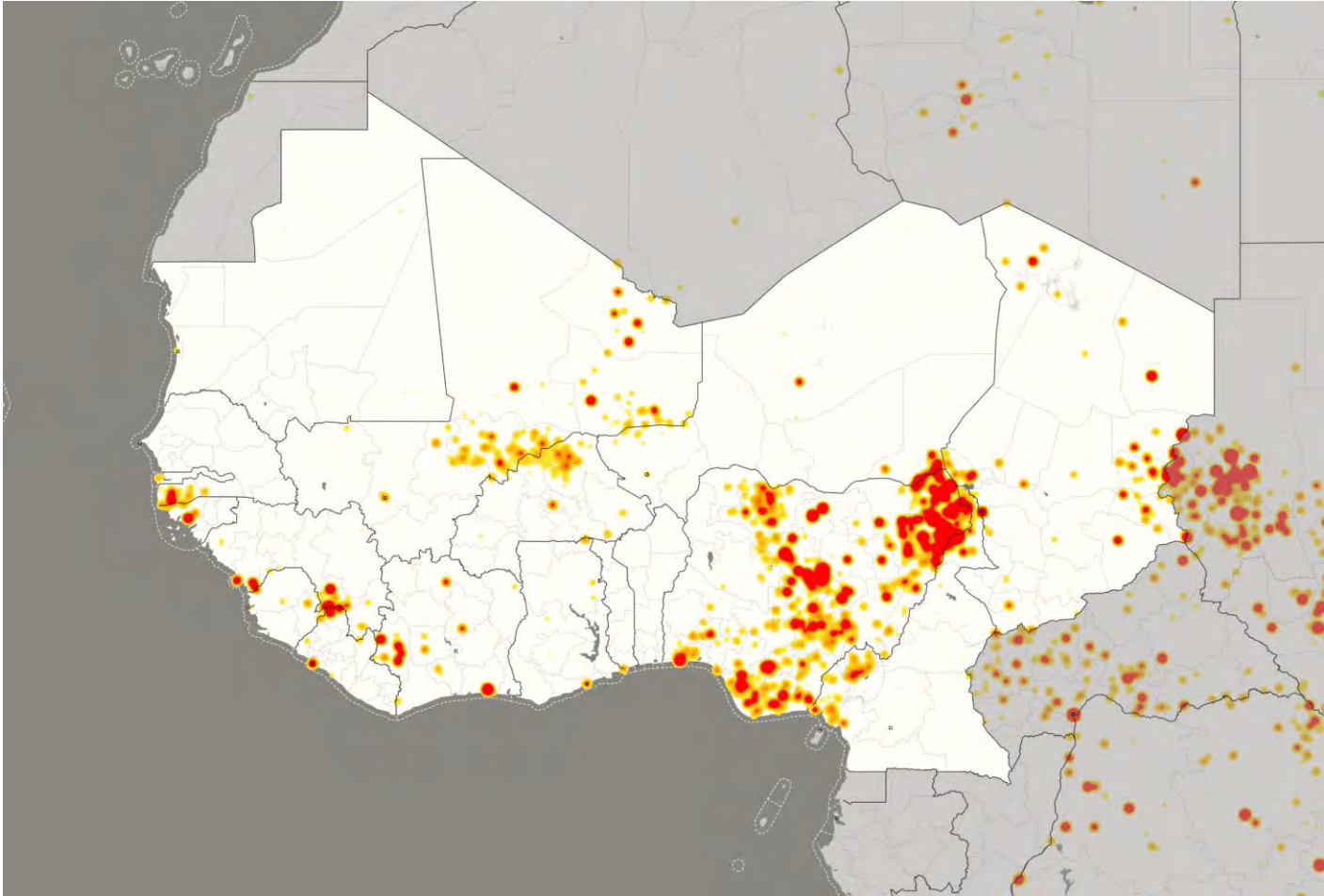Hydrothermal Coefficient

Precipitation

Convergence of Stresses.

- University of Edinburgh
- EC Joint Research Centre
- UNCCD / EC JRC World Atlas of Desertification approach
- Review of methodologies

Identify Hotspots.

Note: Conceptual exemplification using non-environmental data
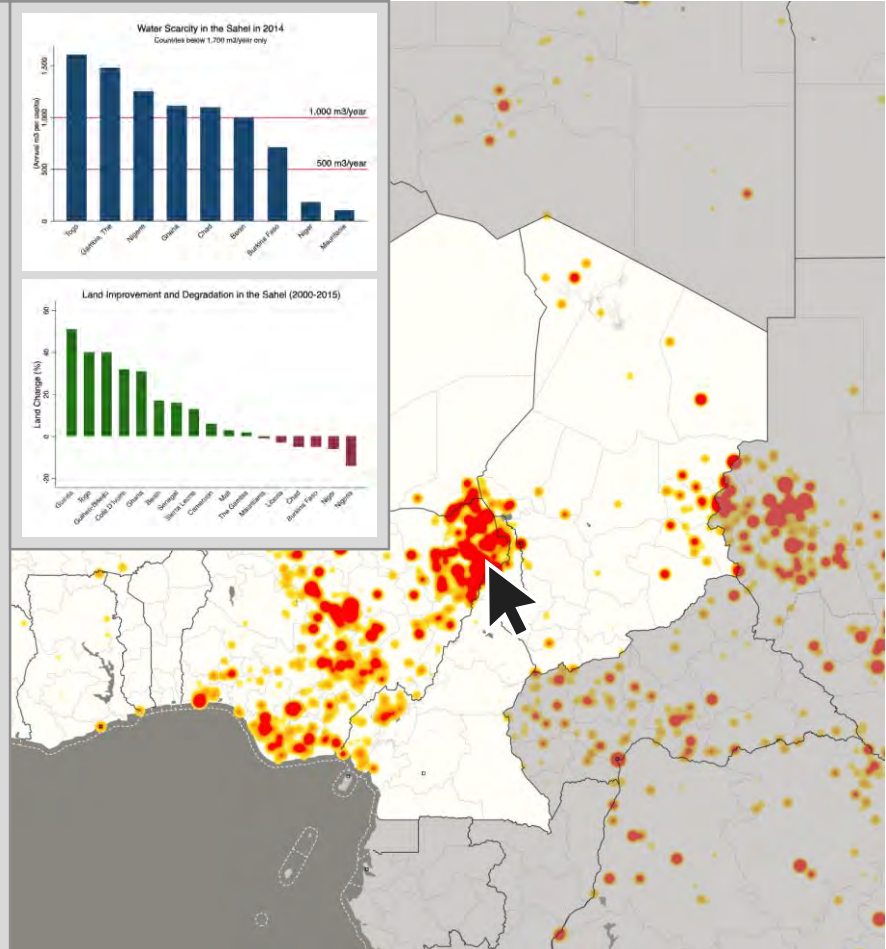
Analytical Dashboard.

- **Trends over time of disaggregated stresses**

- **Set of nature-based solutions to reduce stresses**

- **Contact to focal points for expertise or project set-up**

DISAGGREGATED CUMULATIVE ENVIRONMENTAL STRESSORS

- Forest Loss
- Soil Erosion
- Water Scarcity
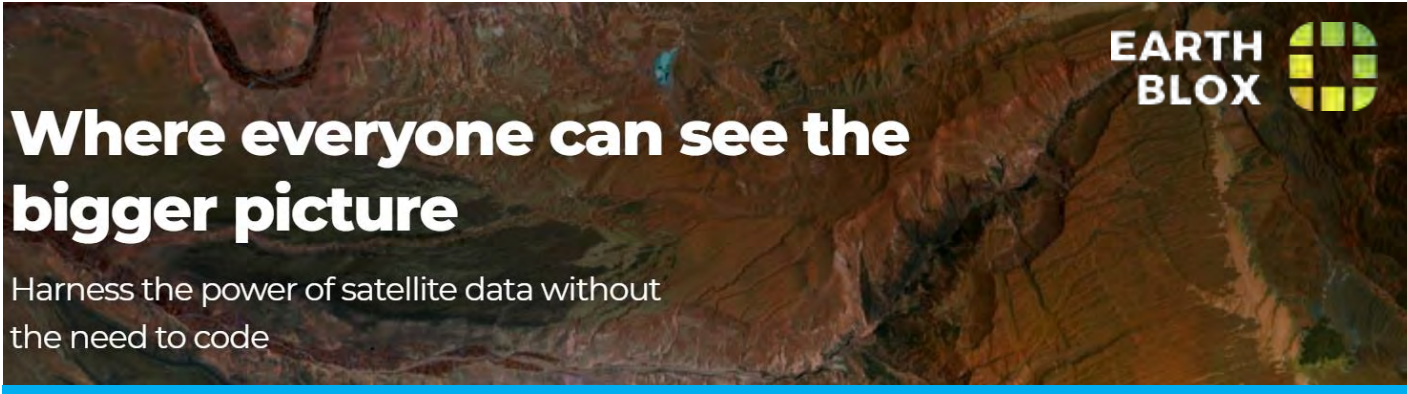- High Population

Potential Threats:
- Floods
- Wildfires

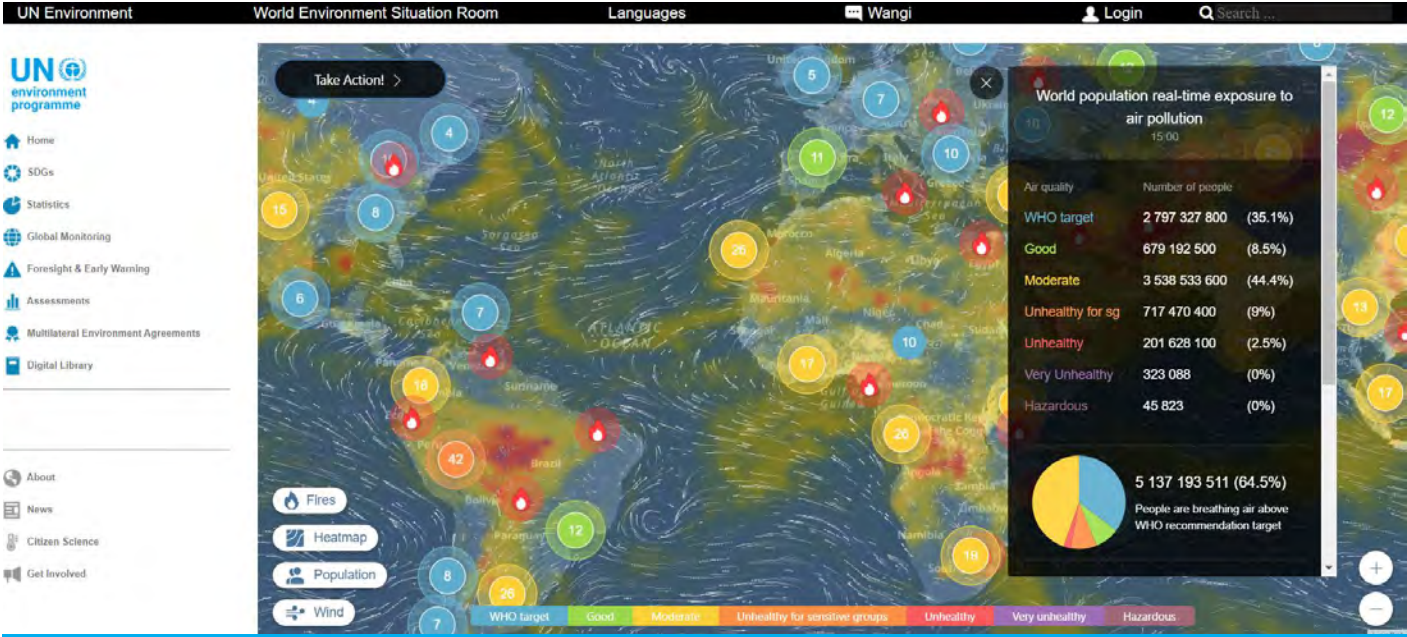Note: Conceptual exemplification using non-environmental data

Analytical Dashboard.

- **Earth Blox**
- **Plug & Play**
- **World Environment Situation Room**

Use-Cases and End-Users.

CCA and SDCF

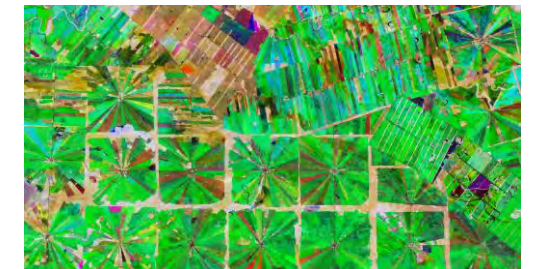### Climate Security Policy Support

Early Warning

Humanitarian Operations

Peacebuilding and Peacekeeping

Finance Sector

Unique value propositions.

Approach:

- User-centered co-design
- Tailoring products to specific use-cases
- Scientifically based + transparant
- Plug and play into other risk and fragility platforms

Analysis:

- Geospatial and temporal
- Disaggregation of stresses
- Seasonal to annual updates of trends
- Situation analysis, not signals/indicators
  - Working with partners for actionable insights
  - Assess overall livelihoods impact & conflict risk
  - Validate and contextualize data-driven insights
- Scope for predictive analysis
  - Environmental and climate risks, and their impacts on livelihoods

Next steps.

1 | **Revision and detailing of theoretical framework and methodology (Sep-Oct 2020)**

2 | **National prototype of Somalia (Nov 2020 – May 2021)**

3 | **Regional prototype in Horn of Africa (June – Dec 2021)**

| **Concurrent tests and development**
Colombia, Haiti in collaboration with local expertise and research institutes

Get in contact.

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Funded by:

Q&A

1. **Earth stress**

2. **Scientific methodology**

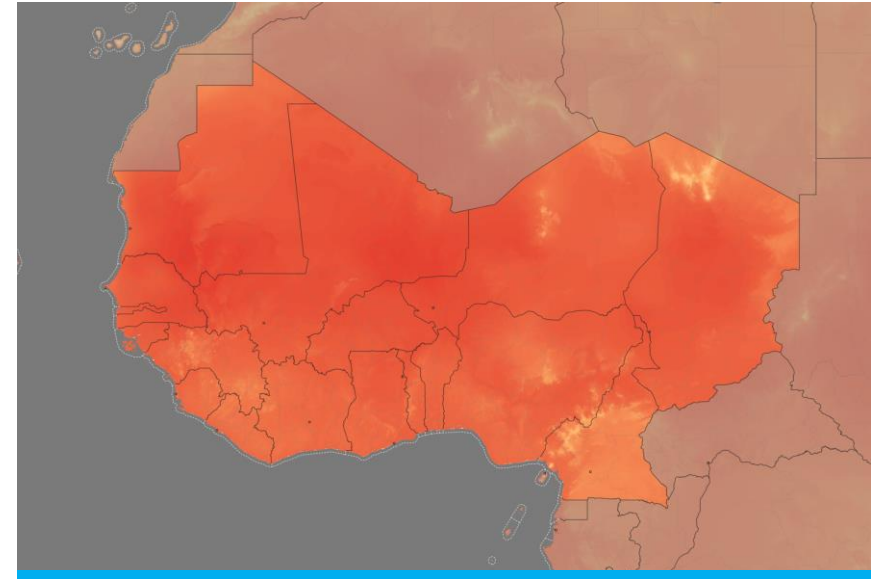3. **Implementation and collaboration**
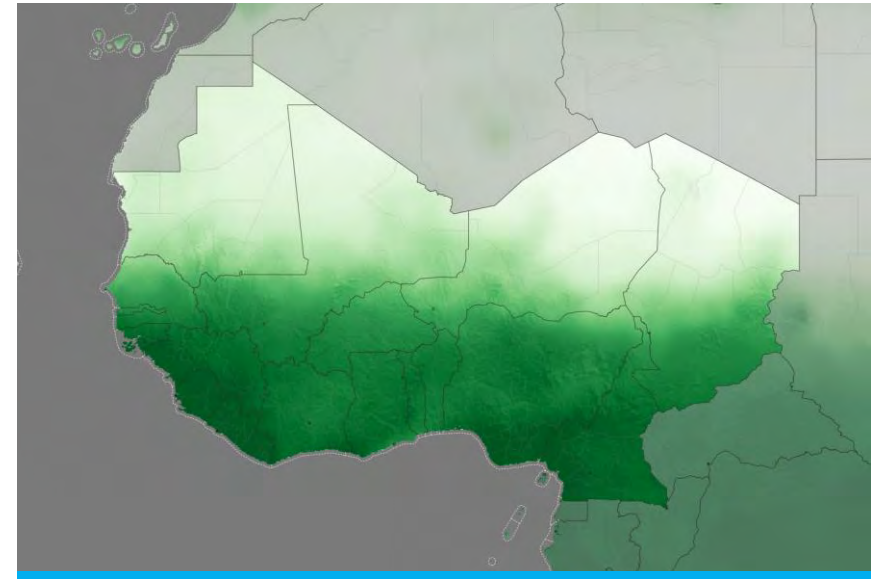
4. **Dashboard use**

Extra slides

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Climate Emergency.

Temperature

Annual Mean Temperature 2041-2060
(RCP 4.5, CMIP5)
Source: CHELSA
2017

Precipitation

Annual Mean Precipitation 2041-2060
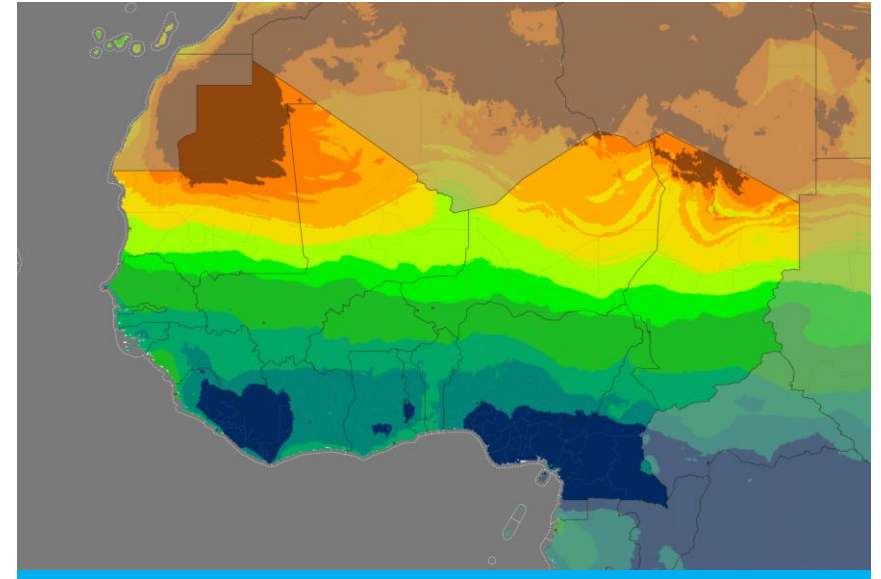**(RCP 4.5, CMIP5)**
Source: CHELSA
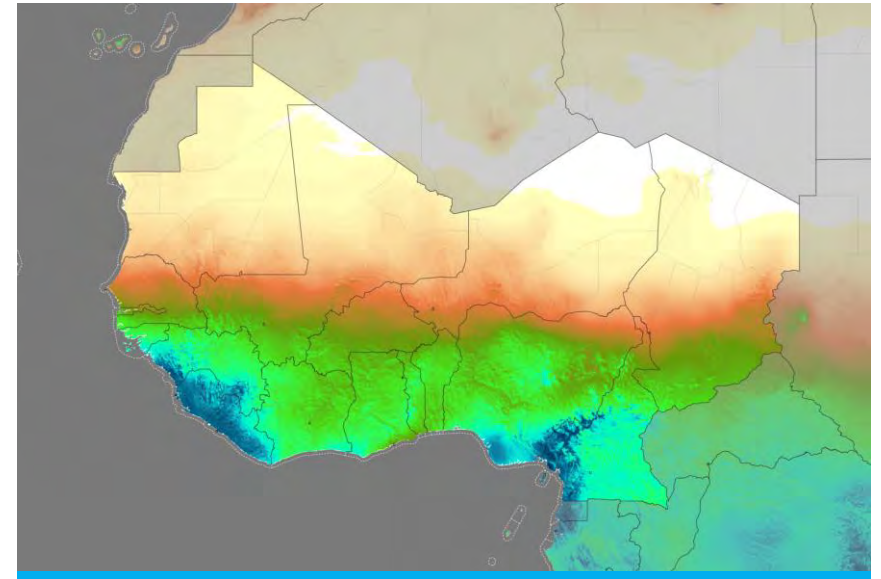**2017**

Regional Ecology.

Rainfall Erosivity

Global Rainfall Erosivity: R-Factor
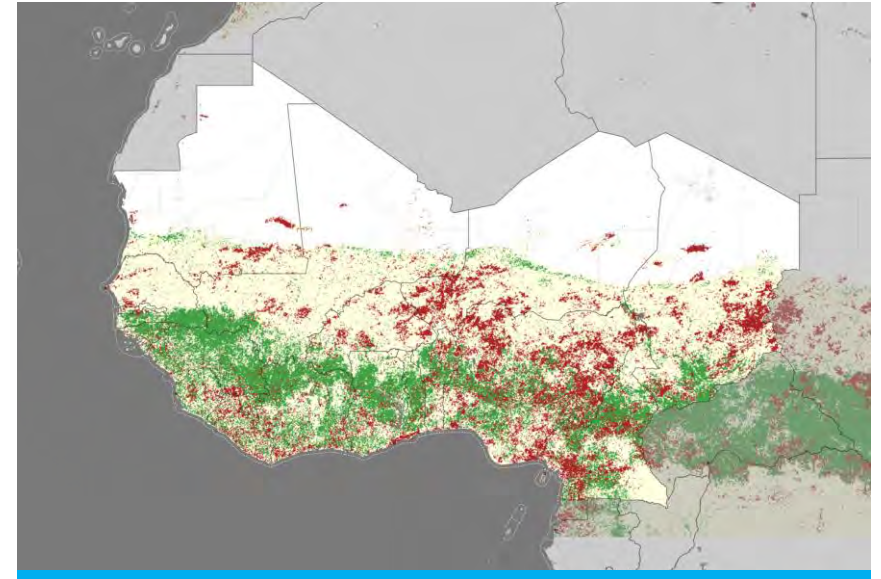Source: JRC
2017

Hydrothermal Coefficient

Selyaninov's Hydrothermic
Coefficient
Source: CHELSA
2017

UN
environment
programme
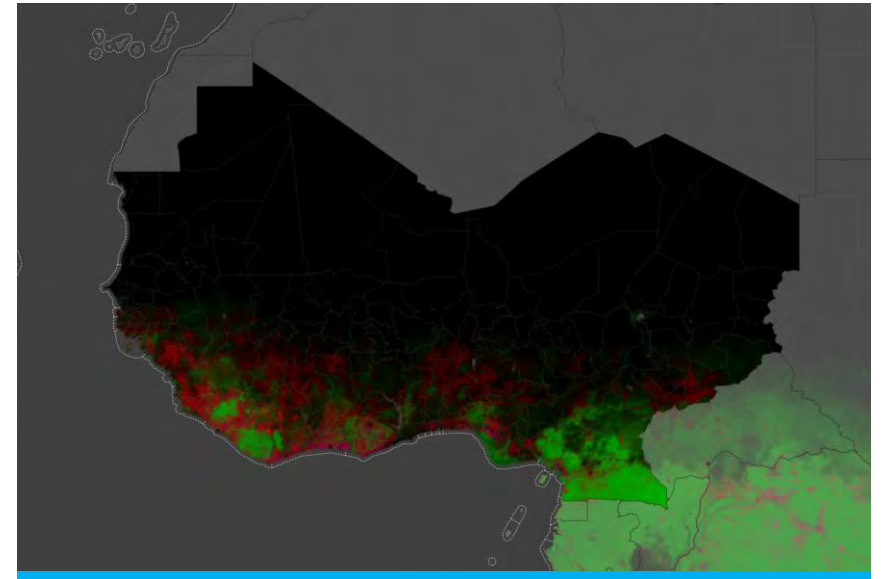
Environmental Degradation.

Land Degradation

**SDG15.3.1 Land Degradation
Source: UNEP/GRID-Geneva
2019**

Forest Loss

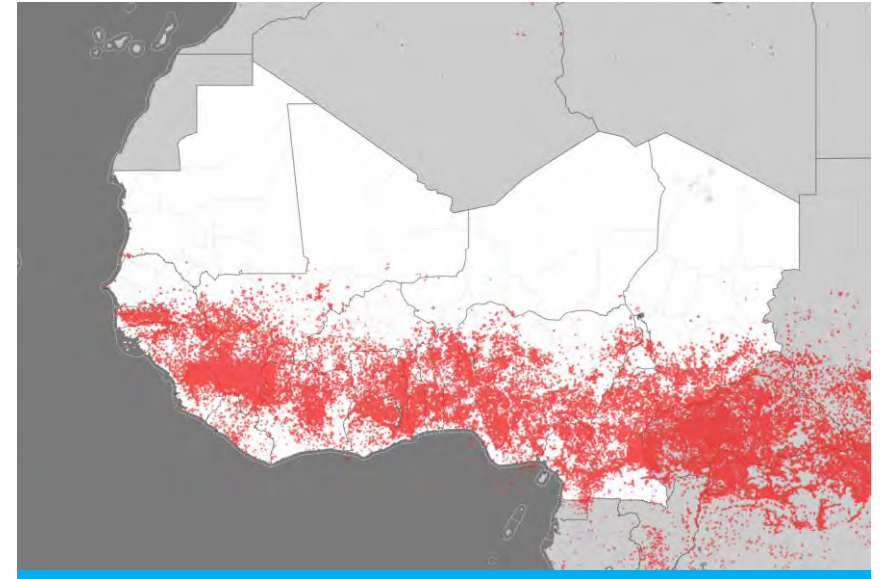**Global Forest Change 2000-2018
Source: Hansen/UMD/
/Google/USGS/NASA
2013**
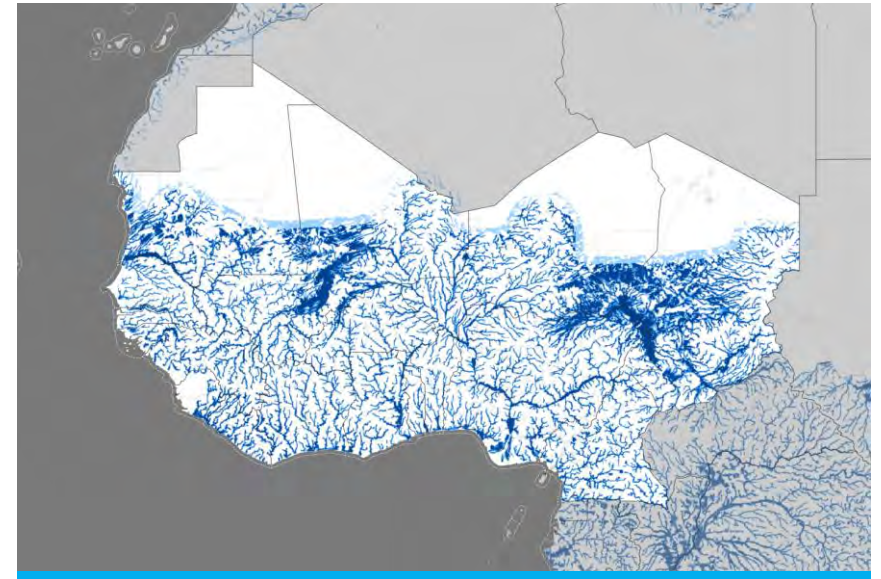
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Natural Hazards.

Wildfires

**Near Real-Time Active Fires
Source: NASA
2020**

Floods

**Source: International Centre for
Geohazards/NGI
2015**

User-centered co-design.

Involve end-users throughout the development

- Tailor to the end-users needs and questions
- Highly usable and accessible data product

Widespread user-consultation

- May-June 2020
- 89 experts from 48 organizations
- Range of sectors

Data-driven tool problems.

- Multitude of tools and dashboards
- Technical skills
- Limited uptake
- Limited impact

Early Progress Report.

1. **Open source spatial database infrastructure built: [MapX](#) and in [GitHub](#)**

2. **[Data catalogue](#) and [story map for Sahel](#) developed.**

3. **Scientific-technological partnership established with University of Edinburgh and Earth Blox.**

4. **End-user and expert consultations completed. Wide support and high demand.**

Note: Access the links by clicking on the blue, underlined words.