



**ICTs 4 Disaster Risk
Management:
IoT/LoRaWAN for climate
monitoring and early
warning in mountainous
areas**

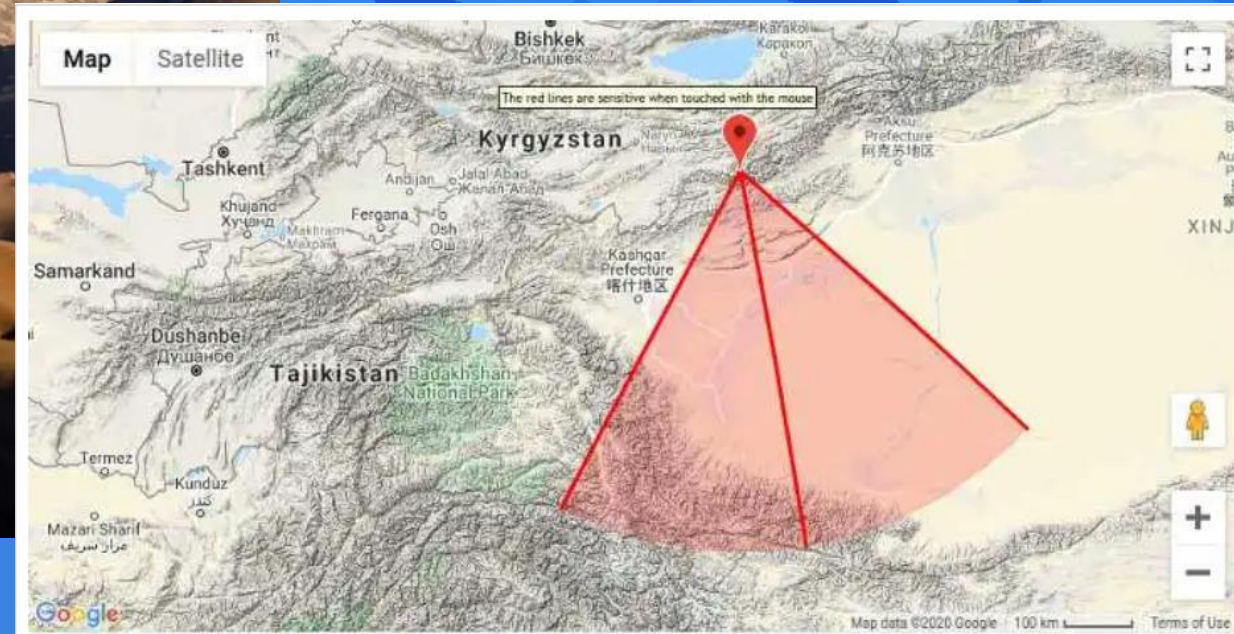
Talant Sultanov / Aziz Soltobaev

Internet Society Kyrgyz Chapter

Quiz

Where is the world's longest line of sight?

The longest line of sight from **Pik Dankova (5,892m)** in **Kyrgyzstan** to **Hindu Tagh (6,421m)** in **China**, 542km away.



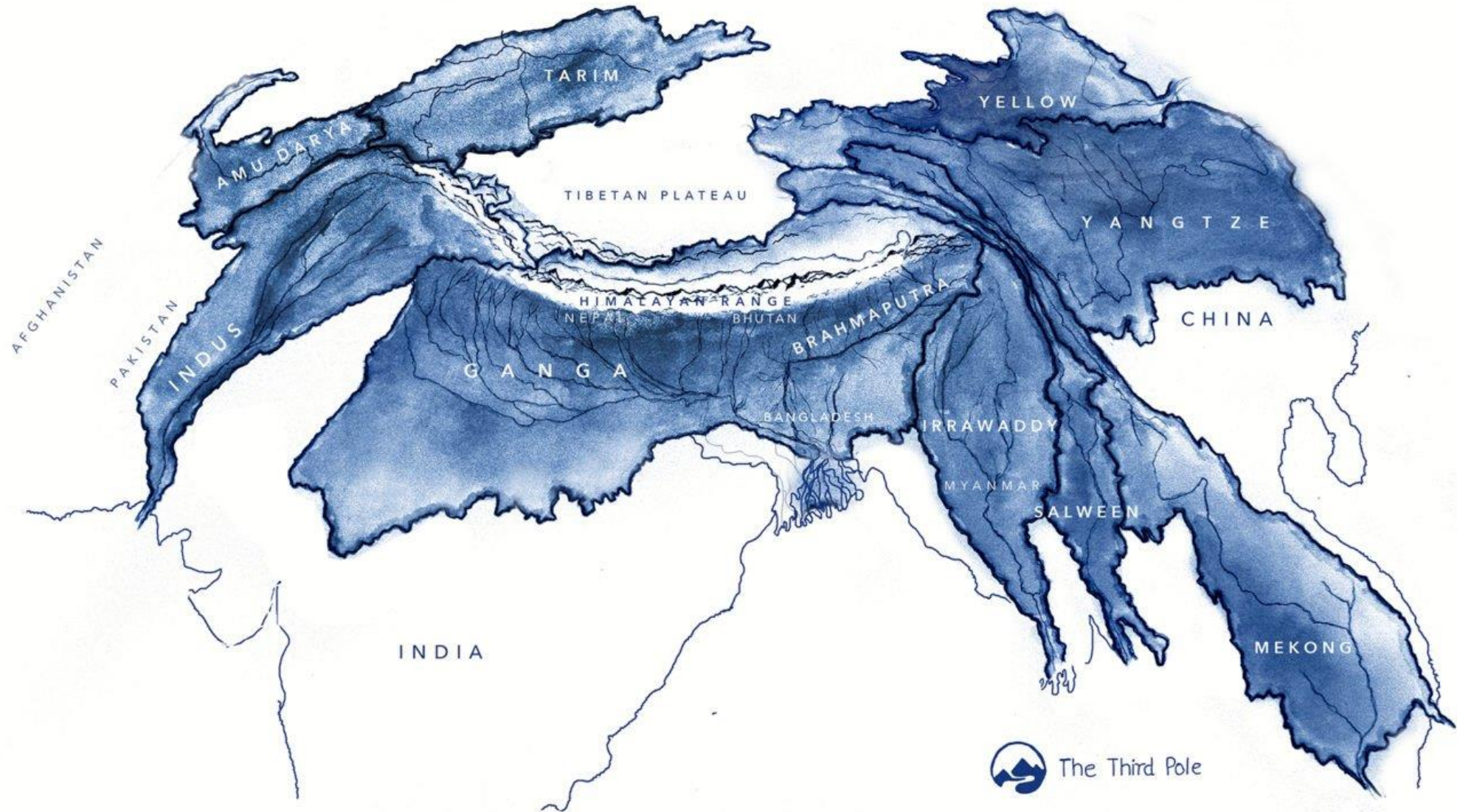
The view SSE from Pik Dankova looks across the Taklamakan Desert from the Tien Shan in Kyrgyzstan to the Kunlun Mountains in China

Pik Dankova, Kyrgyzstan (5,982m) at sunset from one of its foothills (Photo: Christian Bock, www.christian-bock.net)
<https://www.markhorrell.com/blog/2020/what-mountain-summit-has-the-worlds-longest-view/>

Challenges in Central Asia

The Third Pole: the largest reserve of freshwater outside the polar regions

This region is the source of the 10 major river systems that provide irrigation, power and drinking water to almost 2 billion people in Asia – a quarter of the world's population

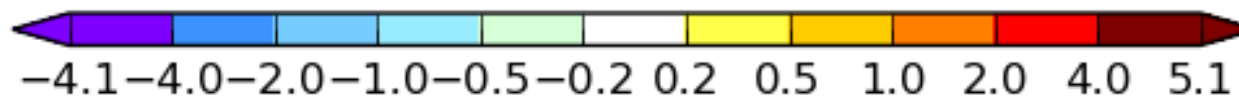
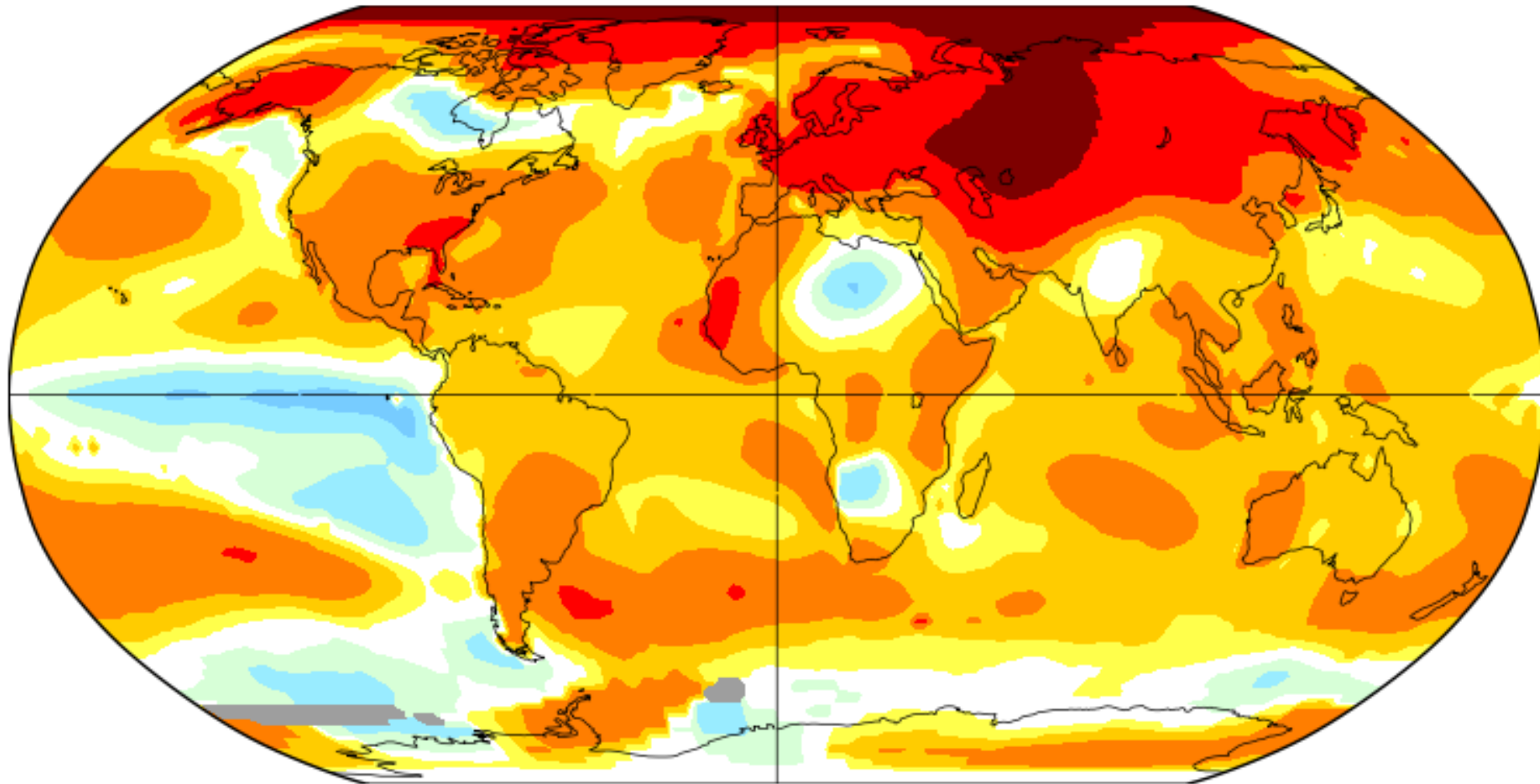


Central Asia is hardest hit by climate crisis

Dec-Jan-Feb 2022

L-OTI(°C) Anomaly vs 1951-1980

0.88



NASA

Disasters, glaciers melting, water shortages



▲ British tourist captures avalanche sweeping over group in Kyrgyzstan - video

Kyrgyzstan

British tourists survive avalanche in Tian Shan mountains of Kyrgyzstan

Need more information about climate

Stationary Weather Stations

- Only ~50 stations in Kyrgyzstan
- Expensive: \$80K
- Heavy
- Need electricity
- Need communications
- Personnel
- Frequency of data collection
- Limited set of measurements



ICTP/ISOC to the rescue with IoT/LoRaWAN

Stationary Weather Stations

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IoT LoRaWAN

Unlimited sensors

Small fraction of cost

Lightweight

Long-lasting batteries

Long-range communications

Autonomous

Real-time data

Wide range of sensors

Mountainous
Landlocked
Sanctions-locked
Braindrained





photo by SLF Kyrgyzstan / Snow Leopard Trust / SAEPP

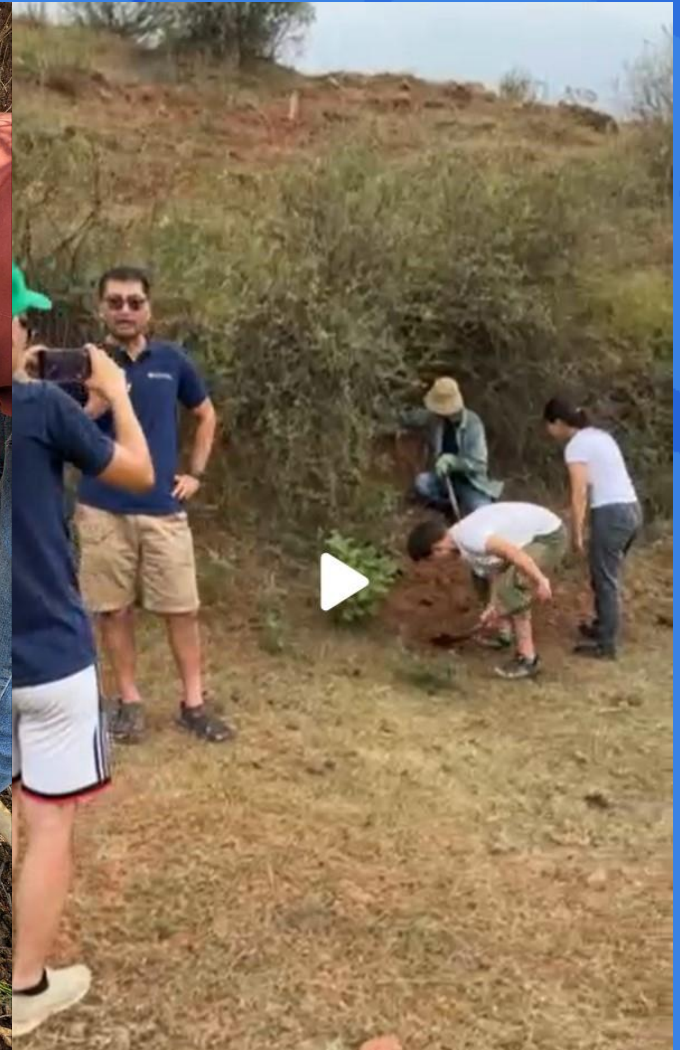


Use cases of IOT/LoRaWAN in Kyrgyzstan

Weather stations



Landslide Monitoring



Floods



Glaciers and mountain lakes



Snow Leopards/Yaks Tracing



Partnerships

Implementation:

ISOC-Foundation,
ISOC-Kyrgyz Chapter,
ICTP,
CAIAG

Government:

Ministries of Emergency
Situations,
Climate Protection,
Digital Development
Agriculture

Interest:

EU, FAO, WFP, UNESCO





Thank you for your Attention
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<https://isoc.kg>