World Bank Hydromet Support in Central Asia

22nd COSMO General Meeting

September 9, 2020

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Background

- Hydromet engagement in the region began in 2009
- Central Asia Hydrometeorology Modernization Project 2011-2023
- Strengthening Early Warning of Mountain Hazards in CA 2015-2021
- Holistic support to improve: institutional management, observation networks, ICT systems, forecasting tools, staff technical capacity, leveraging of regional and global collaboration and resources, service delivery
- COSMO members have been providing support under World Bank projects and other initiatives: Roshydromet, MeteoSwiss, DWD

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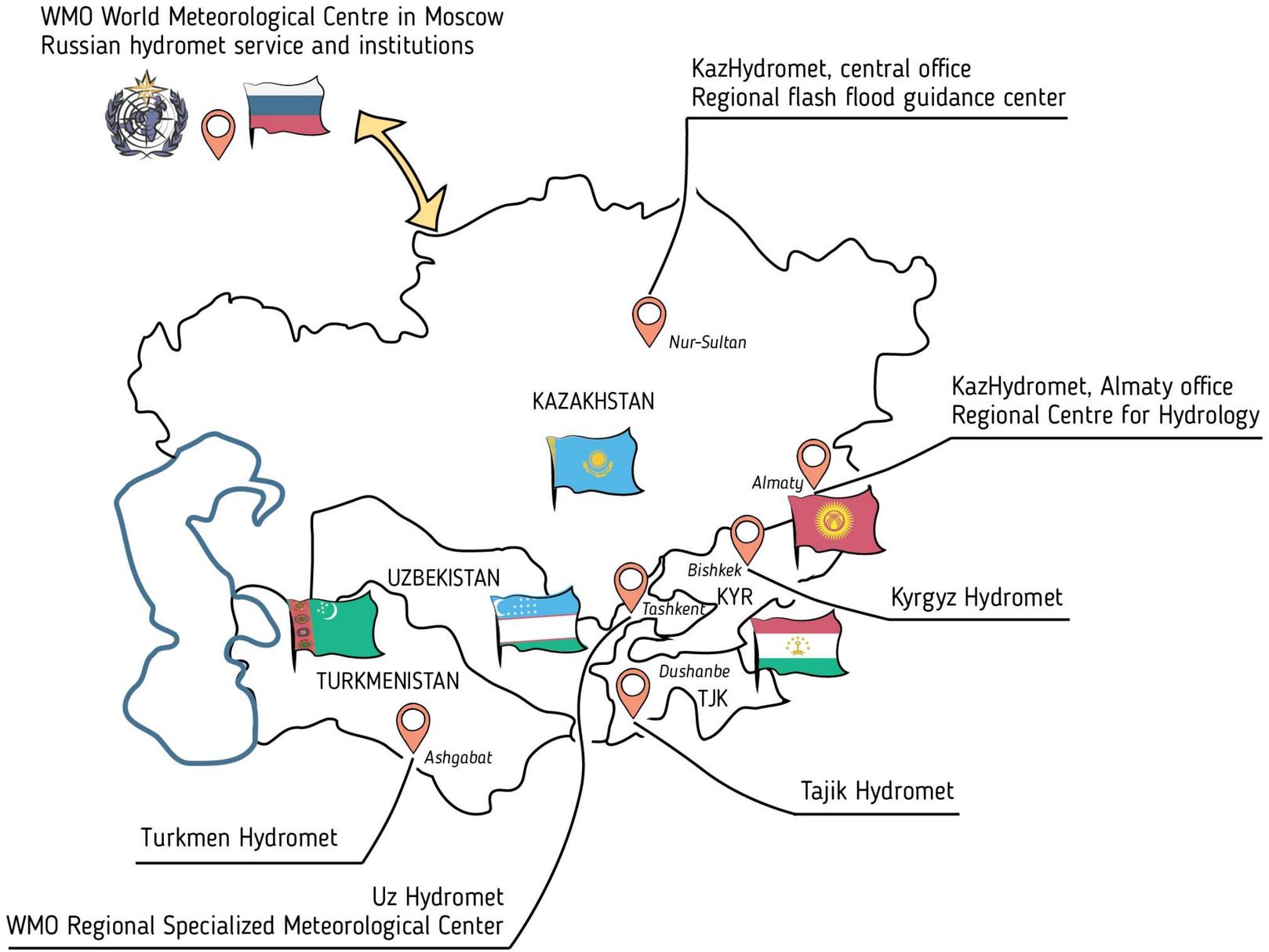
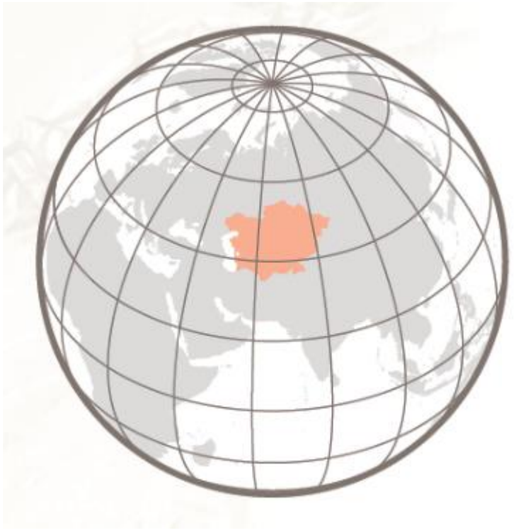
Regional Approach/Centers





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COSMO-CA

- Developed under the SWFDP framework
- Installation at RSMC Tashkent (Uzhydromet)
- Two LAMs:
  - 6.6 km resolution covering all of Central Asia
  - 2.2 km resolution covering mountain domain
- Currently quasi-operational
- http://ca.meteo.uz/
- Significant technical and operational support from Roshydromet

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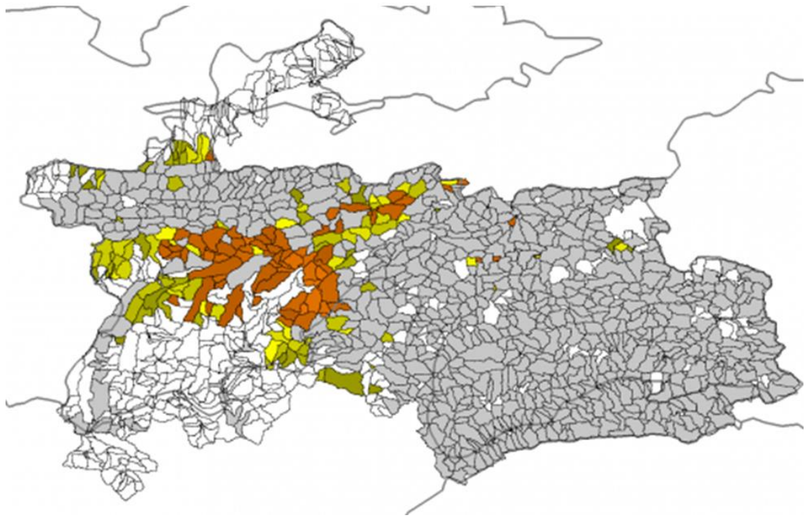
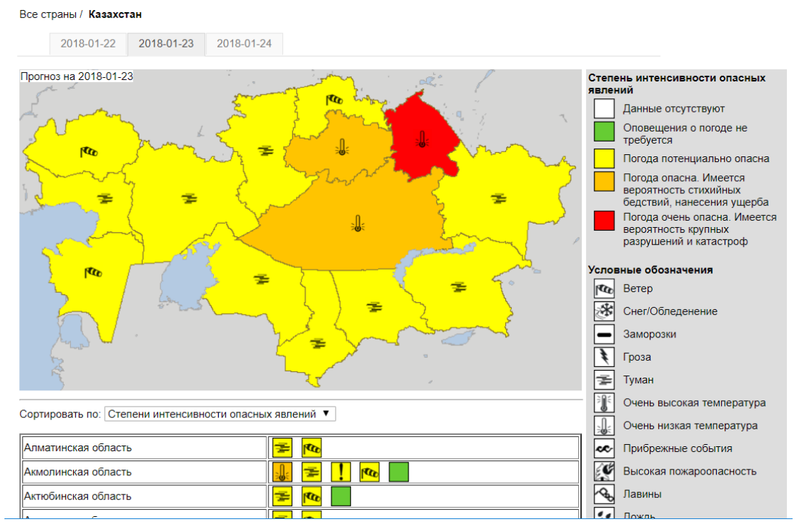
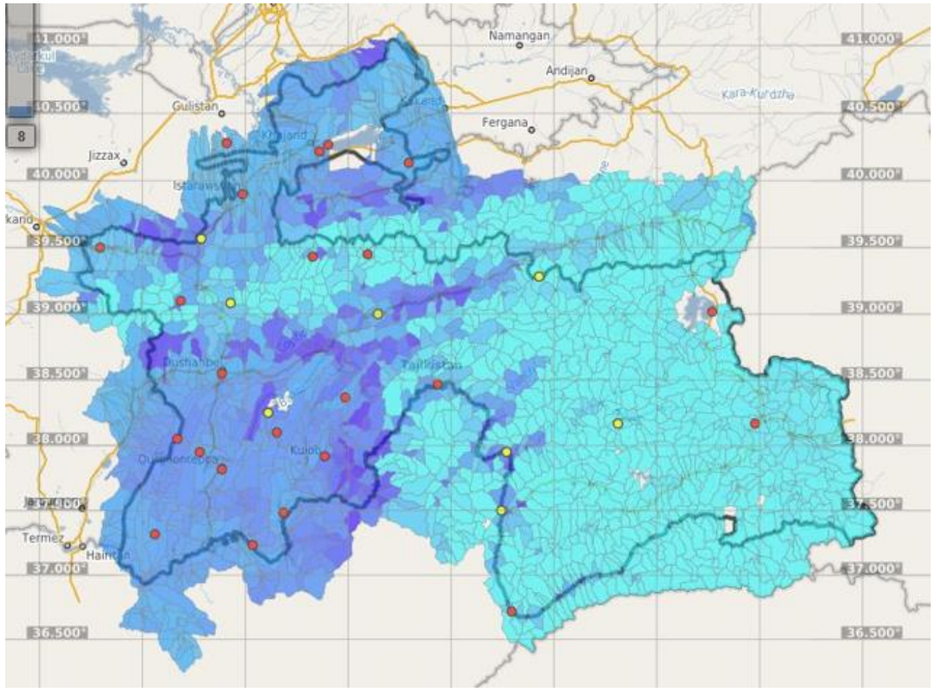
Regional Early Warning Tools (CARFFGS, MeteoAlert)

6-hour Flash Flood Risk





2-week Snowmelt



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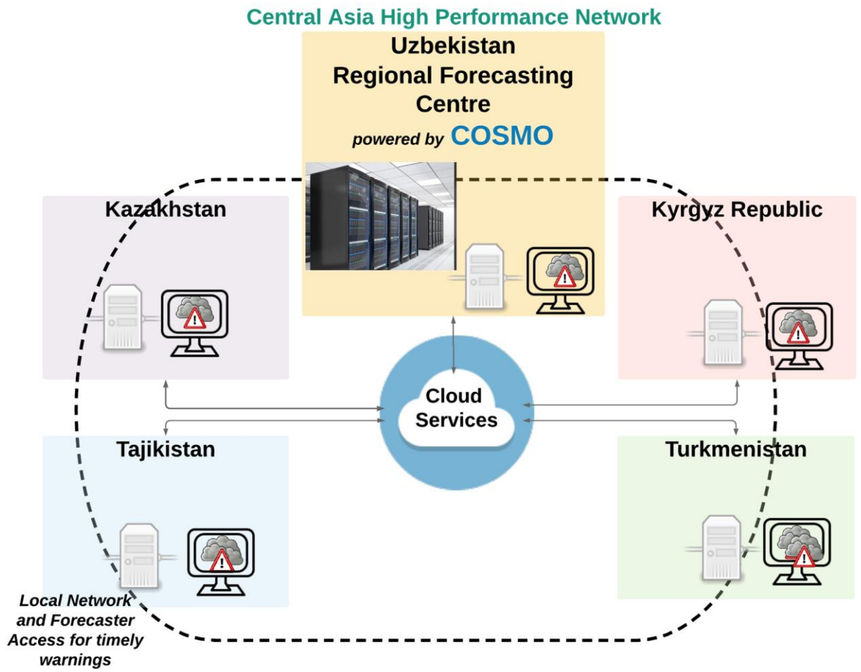
Challenges

- COSMO-CA operational sustainability (HPC, connectivity, power)
- Low resolution of currently fully operational NWPs covering the full region (COSMO-Ru, WRF Kazakhstan)
- Basin-wide approach needs to include parts of Afghanistan
- Limited data exchange
- Hydrology is the priority

Proposed Regional Platform

"Flow Forecasting and Flood Warning Advisory System for the Amu Darya and Syr Darya Basins"



Virtual platform including COSMO-CA, ICON, WRF, CARFFGS and other tools

UKaid
from the British people

EUROPEAN UNION

USAID

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
State Secretariat for Economic Affairs SECO

WORLD METEOROLOGICAL ORGANIZATION

REWS CLIMATE RISK & EARLY WARNING SYSTEMS

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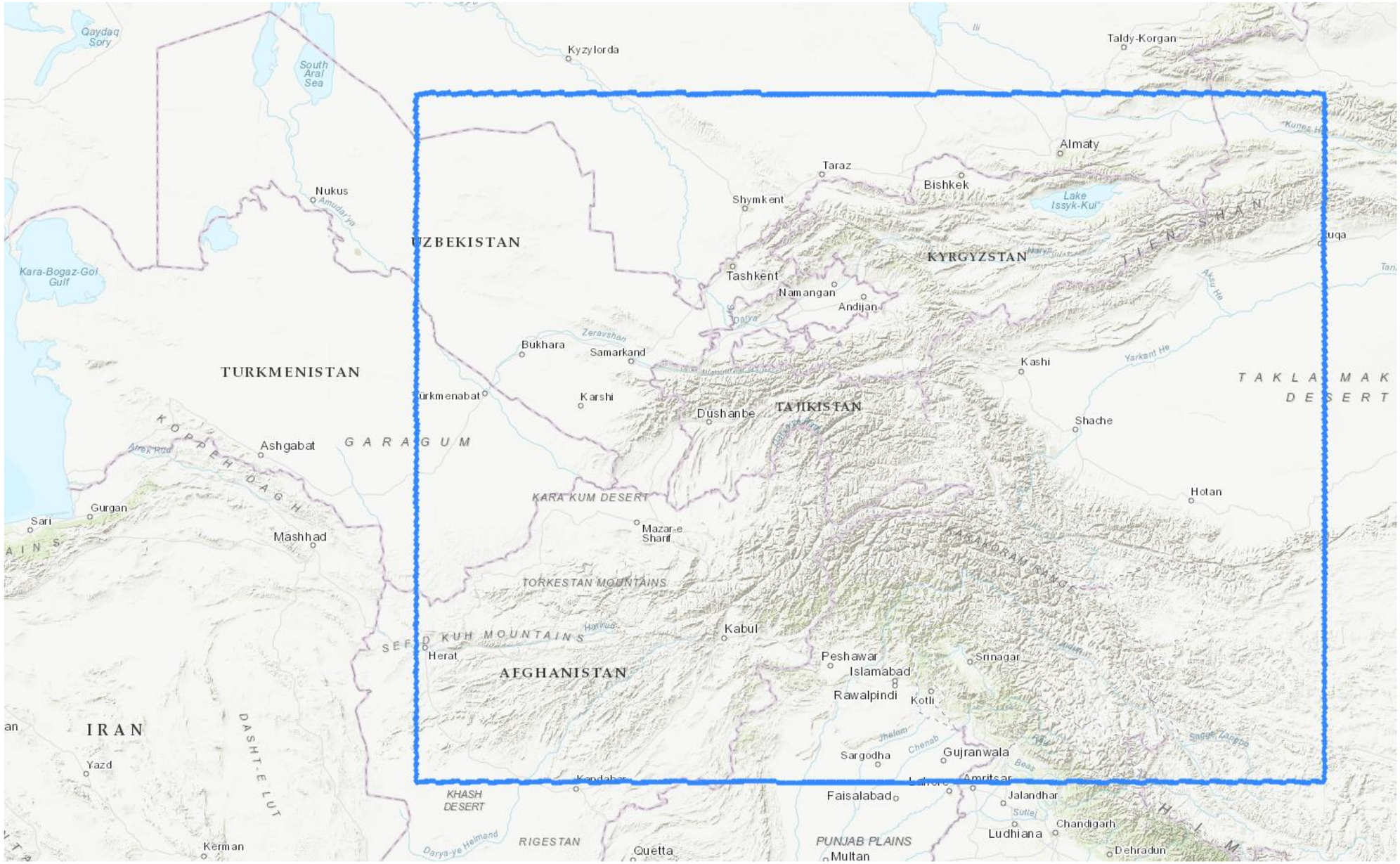
ICON in the cloud – current proposed domain



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Rationale for an “In the Cloud” solution

- Frequently unreliable national telecom services with low bandwidth, jeopardizing transmission of initial/boundary conditions
- Institutions challenged by management/operation of hard- and software
- Significant occurrences of attempted HPC hacking leading to disruptions
- Limited fluency in the English language

Innovative approach of the World Bank and DWD:

Providing the new ICON Model on the cloud, fostering a sustainable and cost-effective solution!

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Position of the Central Asian Countries

- Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan and Uzbekistan have expressed their commitment
- Afghanistan is interested
- Countries recognize the opportunity for an almost immediate leap towards the top NWP technology (“leap-frogging”), with major positive impacts on their hydrometeorological duties
- Will improve NMHSs’ visibility in their countries, and contribute to Central Asian geopolitical stability

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Schedule

2020 Q4	NMHSs identify cloud providers with sufficient national access
2020 Q4	DWD & NMHSs agree on configuration, post-processing and graphical products
2021 Q1	DWD sets up ICON-LAM in the cloud
2021 Q1-2	DWD initiates pre-operational phase with up to four forecast runs per day, tests cloud service proficiency
2021 Q2	DWD trains NMHS forecasters and ICT staff
2021 Q2-4	Forecasters assess ICON-LAM products

NMHS requirements:

2 – 4 Windows PCs with good internet connection

2 – 4 forecasters with experience in NWP and ICT

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Financial arrangements

- World Bank is financing piloting (cloud services and training)
- DWD is contributing staff time for model development and set-up
- After piloting phase, if NMHSs wish to continue, they will need to finance annual operating costs.
- Annual operational costs will depend on many factors - cloud provider, type of contract, internal costs, etc.
- Expected to lie between EUR 10,000 and 100,000 per year, depending on the ICON-LAM configuration.
- Certainly cheaper than running their own NWP when considering ICT costs and expertise needs for hardware (HPC) and software.

Thank You!

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