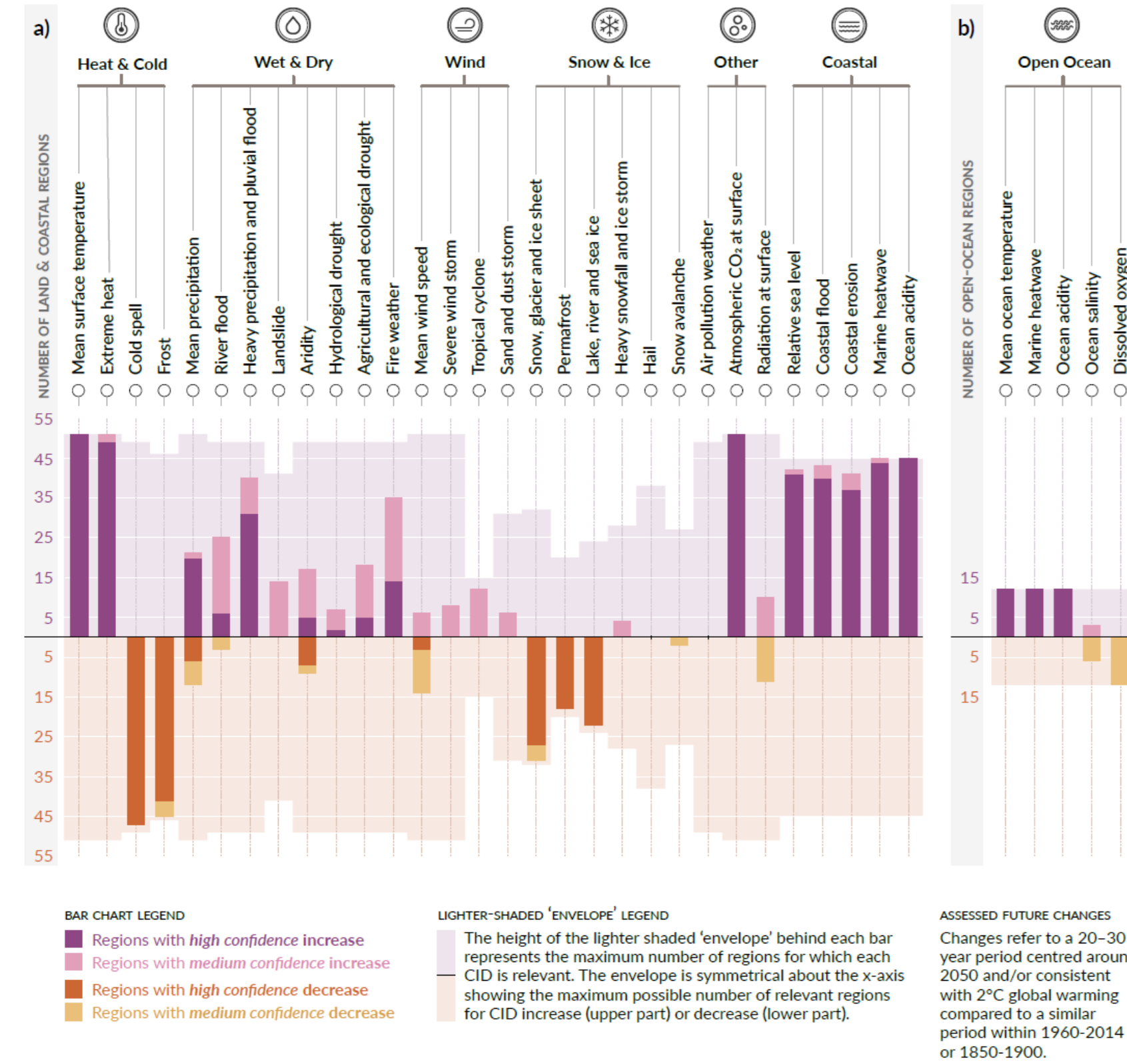




Climate Information for Regional Sustainable Development: Support Ecological Civilization Construction

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1. Climate change is affecting every corner of the world

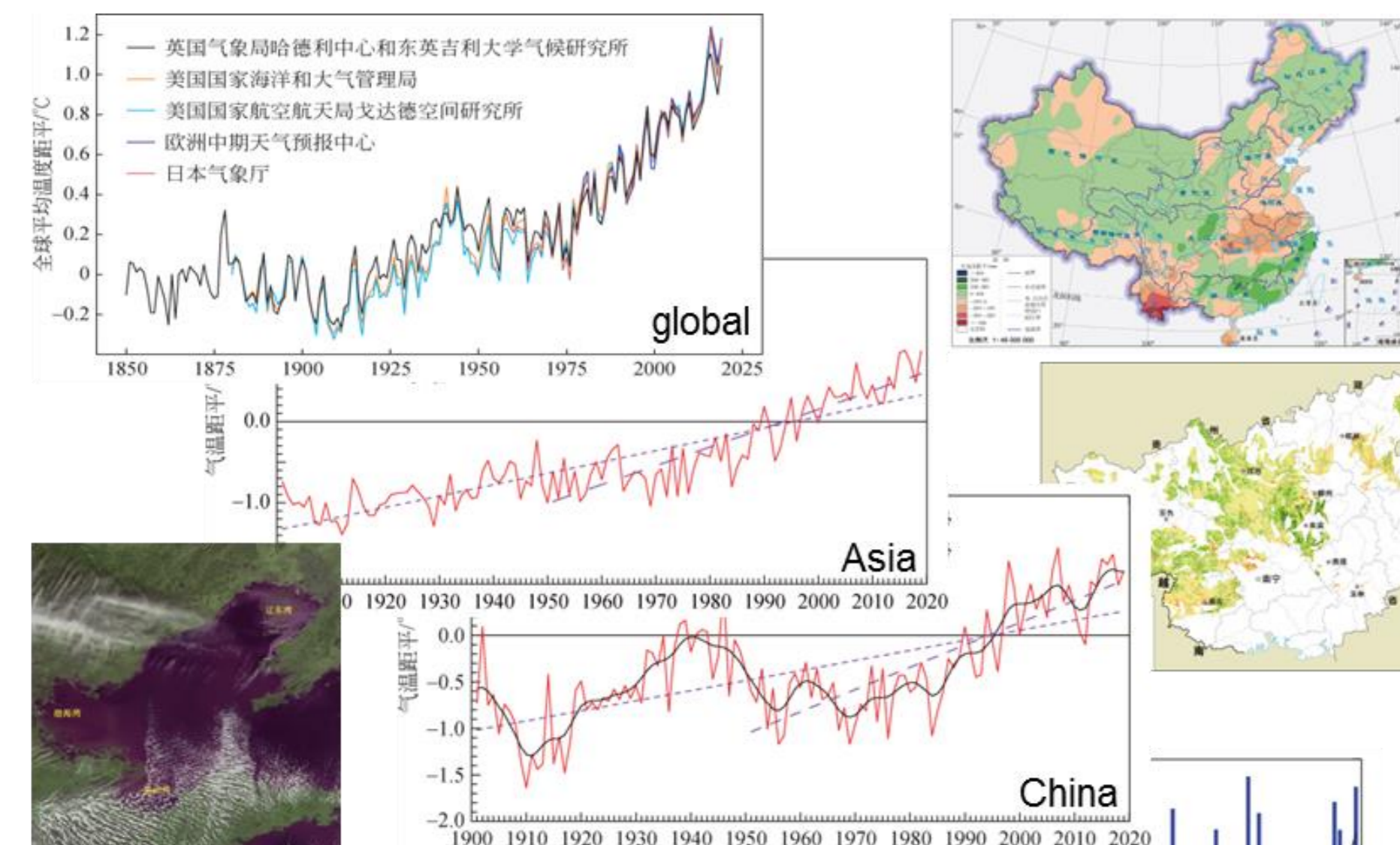


- All regions are projected to experience changes in at least 5 CIDs.
- Almost all (96%) are projected to experience changes in at least 10 CIDs and half in at least 15 CIDs.
- For many CIDs there is wide geographical variation in where they change and so each region are projected to experience a specific set of CID changes.

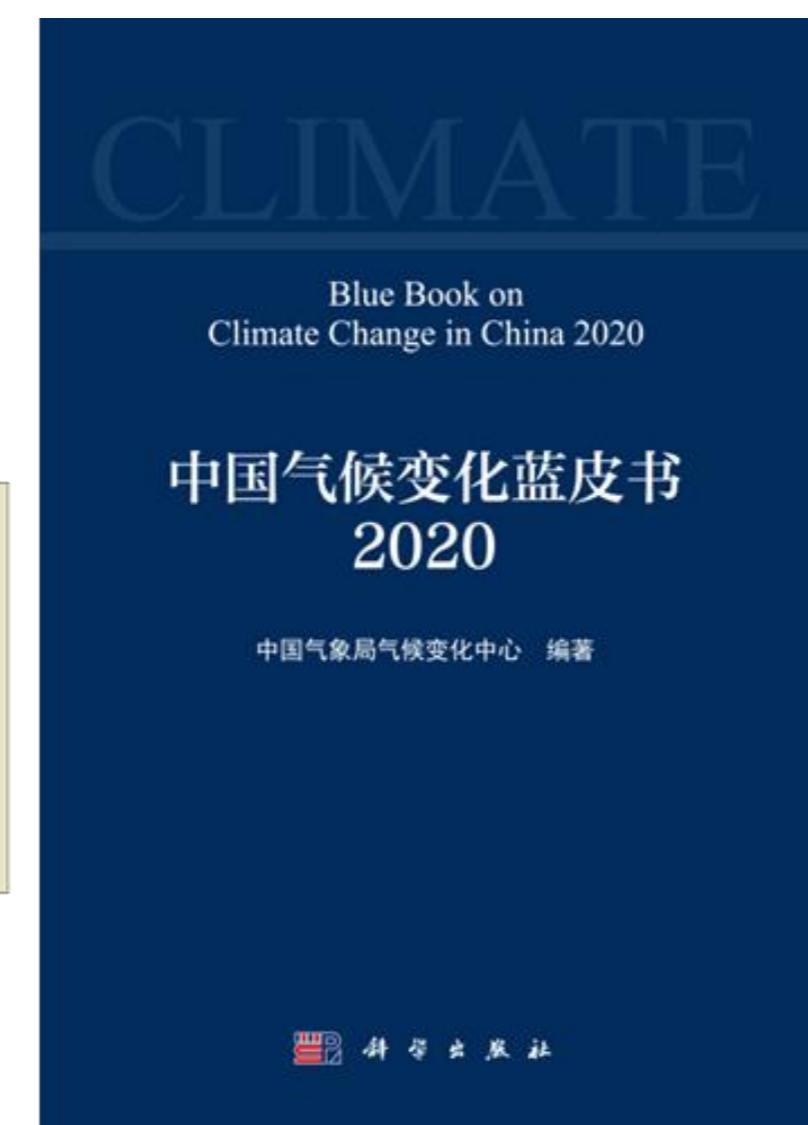
IPCC WGI AR6, 2021

Number of land & coastal regions (a) and open-ocean regions (b) where each climatic impact-driver (CID) is projected to increase or decrease with **high confidence** (dark shade) or **medium confidence** (light shade)

2. Efforts from observations to tackling climate change



- In-situ obs, FY sat., reanalysis
- Centennial to Half-centennial series
- Global to regional scales: global, Asia, China, sub-regions
- Atmosphere, hydrosphere, cryosphere, terrestrial biosphere, natural and human drivers



Blue book on Climate Change Monitoring, since 2009

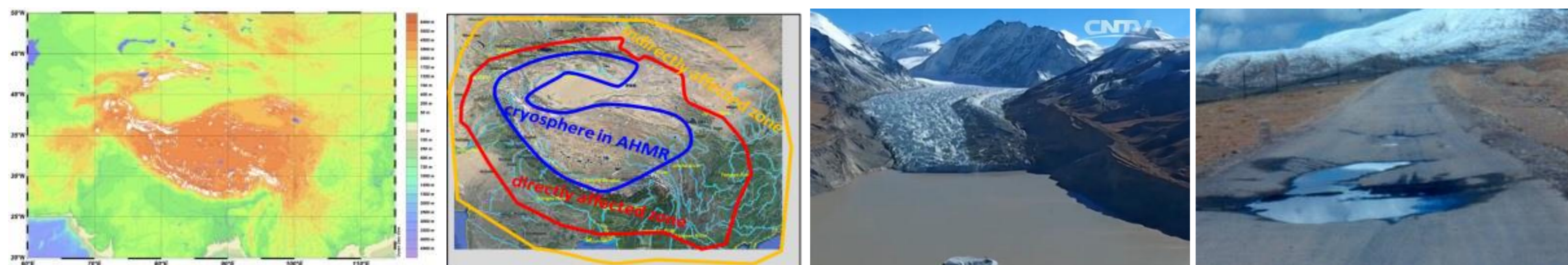


Green Book on tackling climate change, since 2009

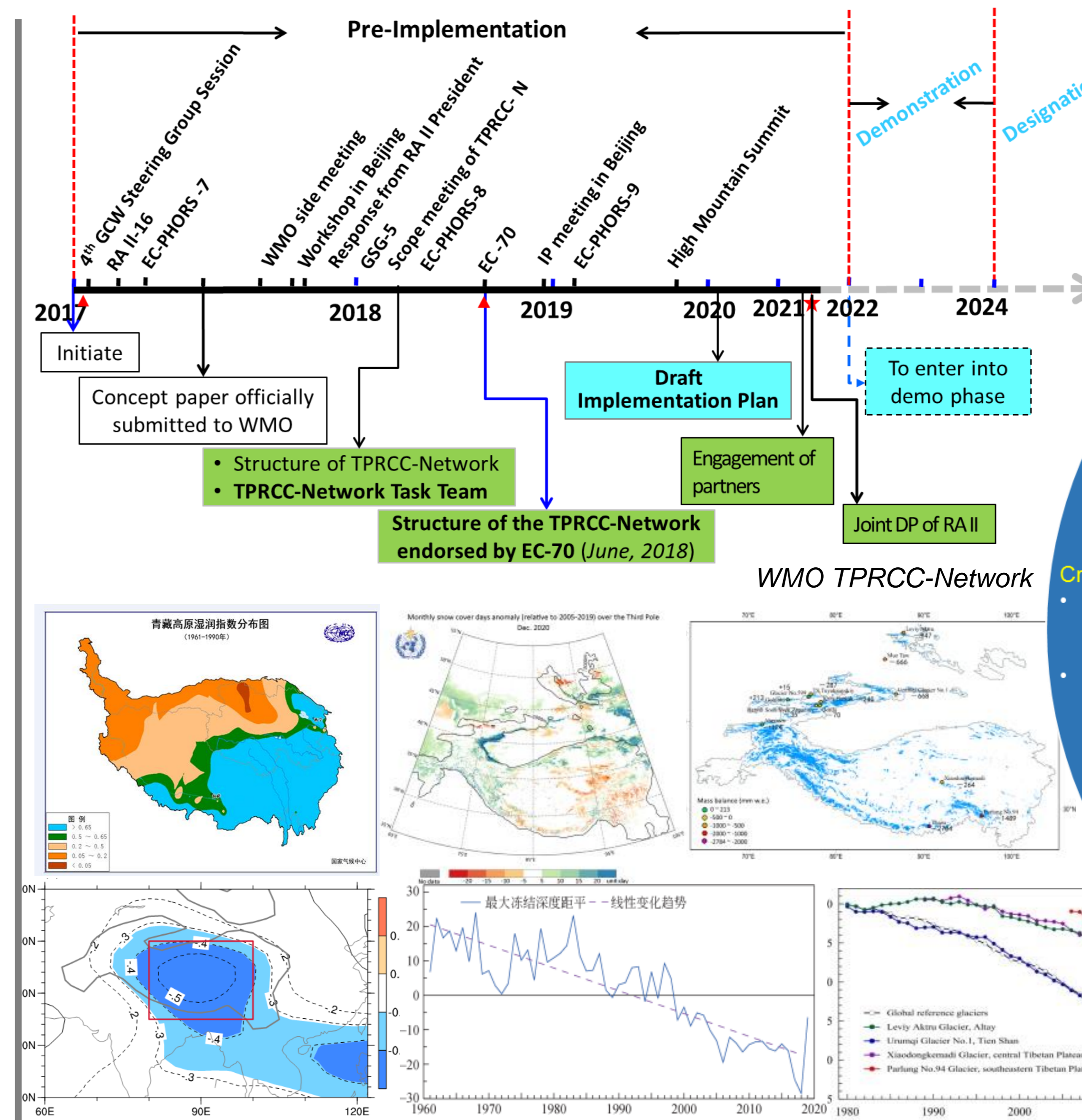
International progress and domestic actions on climate change, relevant research and review

- Enhancing Climate Actions
- Climate Risk Prevention
- Climate Finance and Low Carbon Development

3. Capacity building for climate change in vulnerable region



The High Mountain Asia, with an elevation higher than 4000 m a.s.l. by average, has been experiencing dramatic climatic and environmental changes, accompanying widely impacts on natural ecosystems and socio-economic development.



4. Green Energy supports low-carbon development

Multi-sources observations with high quality

- FY Satellites
- 2400+ surface weather stations
- 169 sounding stations

Assimilation System

- Optimize the parameterization scheme of physical process
- More vertical layers for boundary layer

Verification

- independent sample from ~400 wind masts and 8000+ auto stations
- Inter-comparison with MERRA-2 and ERA5

wind energy resource specialized observation network, CMA

BCC_3km Wind Resource data set

- At 70m and 100m grids with wind masts, relative error of annual mean wind speed at ~80% grids is less than 10% and is less than 5% at ~50% grids.
- At 50m grids, the error is less than 15%, which is 10% lower than MERRA2

Refined wind resource map

- CFD driven by BCC_3km data
- realize micro-site selection and optimization design of wind farm without in-situ observation towers
- support development of decentralized wind power

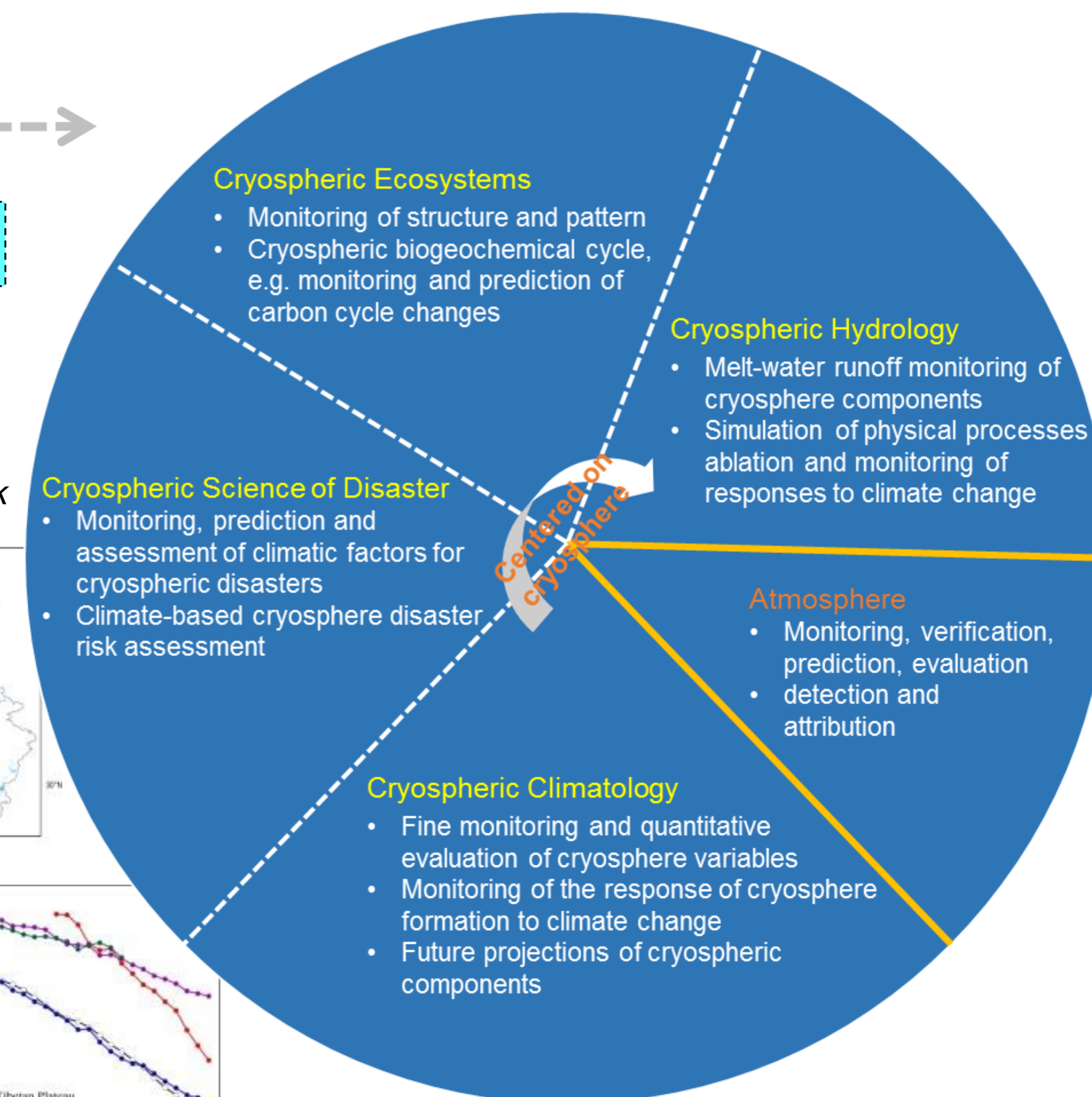
Annual mean wind speed at 80m height

Assessment of China's wind and solar technical capacity

limiting factors: technique, policy, and economy

Liu et al., 2020

...high-mountain regions, where the cryosphere is a prominent feature (IPCC SROCC, 2019).



Regional Climate Service to meet challenges in High Mountain Asia