SEVENTH ASSESSMENT CYCLE

IPCC – Climate Change and Mountains

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UNFCCC SB60 Expert Dialogue on Mountains and Climate Change

05 / 06 / 2024

Importance of Mountains

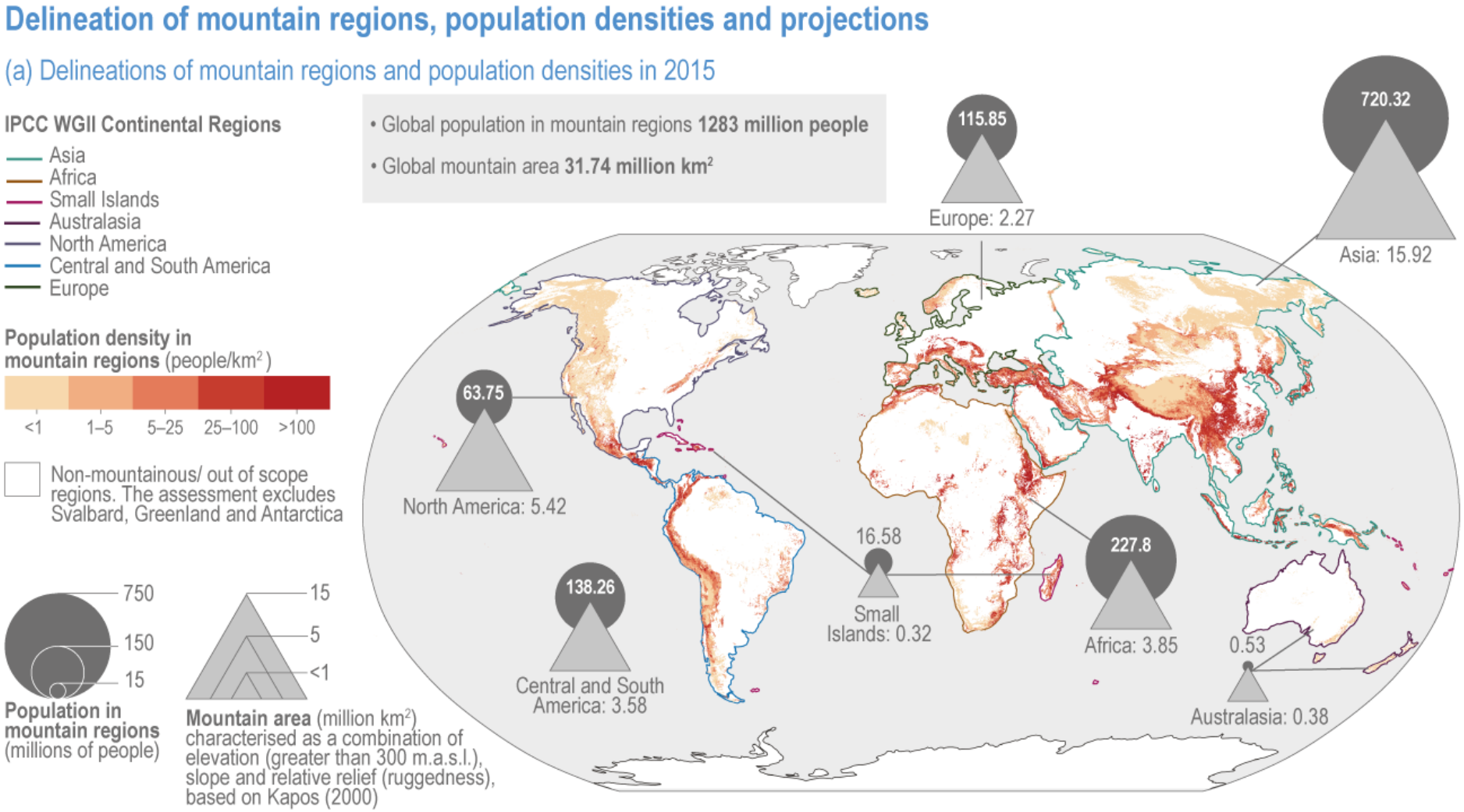
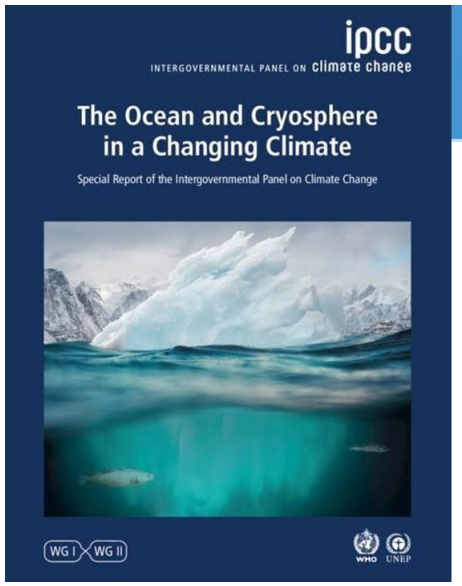


Figure CCP5.1
(Adler *et al.* 2022)

- Global mountainous area of **31.74 million km²** (approximately **23.5%** of the global land surface)
- In 2015, a total of **1.28 billion people** resided in mountain regions (SMCCP5.1)

Mountains in AR6



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High Mountain Areas

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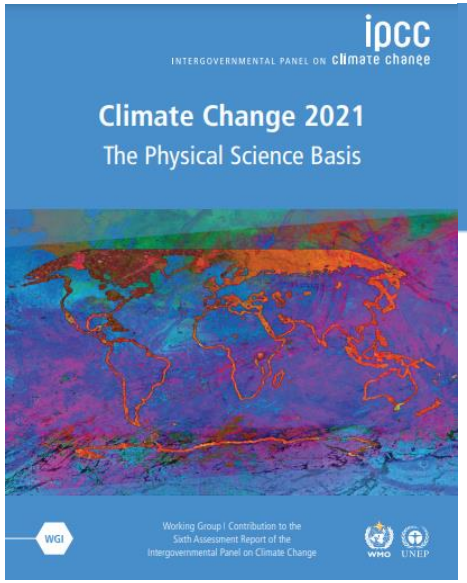

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Climate Change Information for Regional Impact and for Risk Assessment

12.4.10.4 Mountains

Mountains cover about 30% of the land areas on Earth (not counting Antarctica) and deliver a number of vital services to humanity (WGII Cross-Chapter Paper 5; IPCC, 2019b). Climate change in high mountains was addressed in SROCC, which emphasized changes in several climatic impact-drivers. These included an observed general decline in low-elevation snow cover, glaciers and permafrost (*high confidence*), which induced changes in natural hazards such as decrease in slope stability (*high confidence*), changes to the frequency of glacial lake outbursts (*limited evidence*), and climate effects on other climatic impact-drivers (avalanche, rain-on-snow floods) with various degrees of confidence (Hock et al., 2019).

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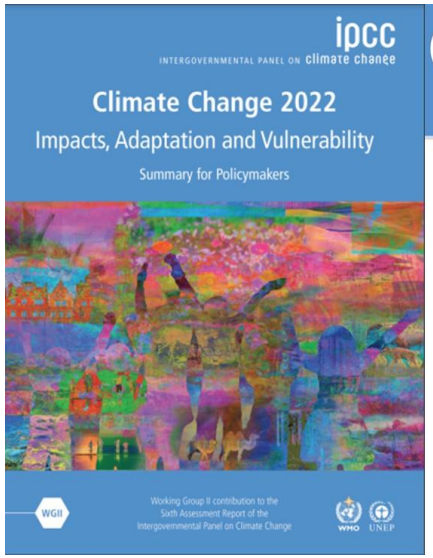
UN environment programme



CCP5

Mountains

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SIXTH ASSESSMENT REPORT
Working Group I – The Physical Science Basis
ipcc INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

Regional fact sheet - Mountains

SIXTH ASSESSMENT REPORT
Working Group II – Impacts, Adaptation and Vulnerability
ipcc INTERGOVERNMENTAL PANEL ON climate change
WMO UNEP

Fact sheet - Mountains

Climate Change Impacts and Risks

To define the geographical scope of the assessment and to quantify the human population residing within these regions, the mountain characterisation given by Kapos et al. (2000)* was employed. This characterisation is consistent with the mountain region extents used in the AR6 WGI report and yields a global mountainous area of 31.74 million km^2. In 2015, a total of 1.28 billion people resided in mountain regions. {CCP5.1}

Physical changes, observed and projected

Temperatures

- Shift of temperatures and freezing level height, with elevation dependence in many regions
- Freshwater temperatures increasing

Snow

- Reduction of snow cover and snow season extent at low altitudes
- Change in streamflow seasonality

Glacier recession

- Reduction of glacier (small/low-elevation loose most of their mass at 1.5°C warming)
- Reduction of water ressource
- Glacier lakes increase, lake outburst

Permafrost thawing

- Destabilization of slopes, rockfalls

Extreme and compound extreme events

- Heavy precipitation and floods, landslides
- Rain on snow events accelerating runoff

Key Risks

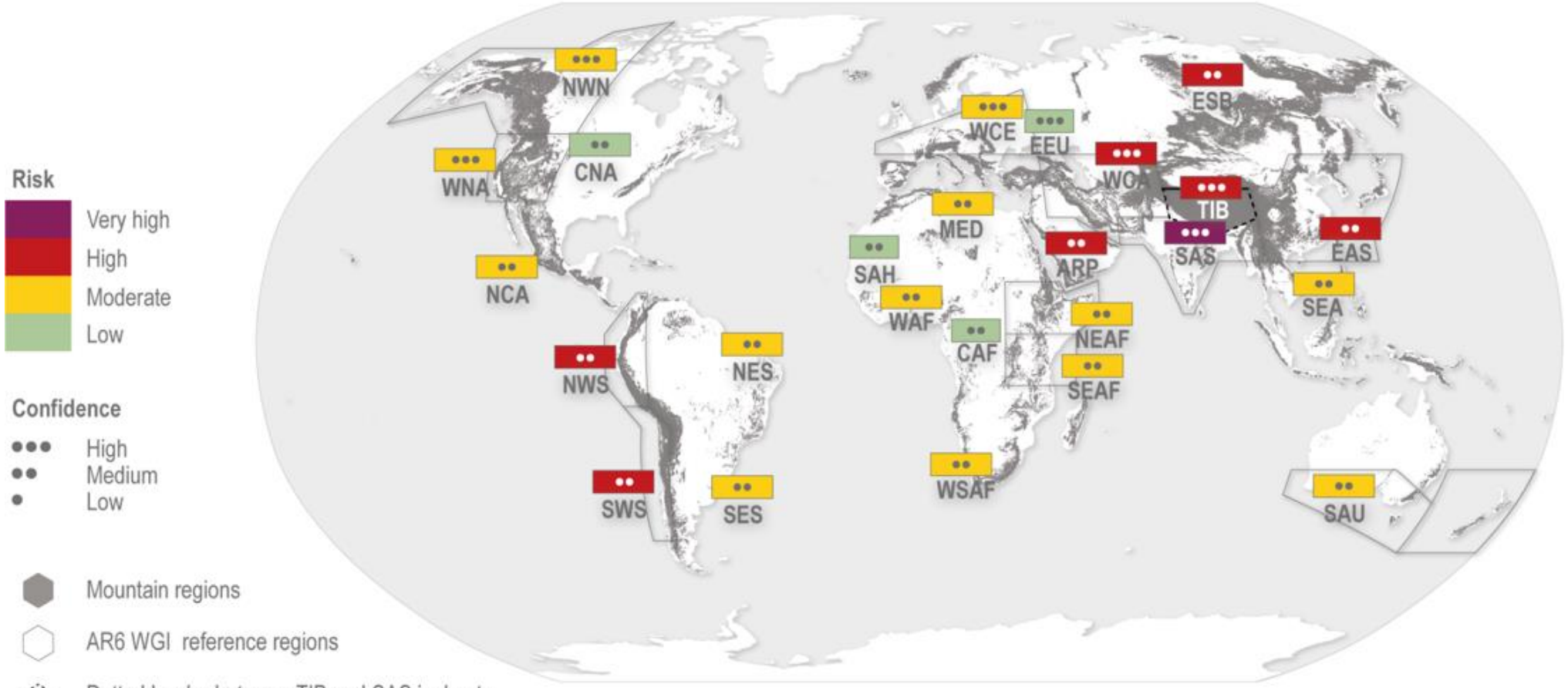
1. Loss of lives, harm to people, and damages to infrastructures from **hazards** such as landslides and floods.
2. Adverse impacts to livelihoods and risks to economic sectors, both for mountain communities and in the lowlands, from **changes in water availability** and its management.
3. Changes to **mountain ecosystems** and risks of mountain top species extinction.
4. **Intangible losses and harm** to people and loss **of cultural values** from decline of ice, snow cover and warming as well as increase in disasters.

Source: CCP5.3.2 (Adler *et al*, 2022)

Risks due to changing mountain water resource

Risks to livelihoods and the economy from changing mountain water resources

between 1.5°C and 2°C Global Warming Level in AR6 WGI reference regions



Source: AR6 WGII CCP5 (Adler *et al,* 2022)

On adaptation …

- The current **pace**, **depth** and **scope of adaptation** are **insufficient** to address **future risks** in mountain regions, particularly at higher warming levels (*high confidence*)
- **Regional cooperation** and transboundary governance in mountain regions, supported by multi-scale knowledge networks and monitoring programmes, enable **long-term adaptation** actions where **risks transcend boundaries** and jurisdictions.
- With warming above 1.5°C, the need for **adaptation to address key risks** in mountains becomes increasingly **urgent** (*high confidence*).

AR6: CCP5.4.1; CCP5.4.2; CCP5.4.3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IPCC AR7 Work Program

Decided at IPCC-P60 (Istanbul, Feb 2024)

- 2 TFI MR reports (2027), 2 TFI EMs (2024)
- SR on Climate Change and Cities (2027)
- WGI, II and III 7th Assessment Reports
- Revision of Technical Guidelines for Adaptation (with WGII report)
- AR7 Synthesis Report (2029, tbc)

Other Expert Meetings expected, in discussion

Under way

- Call for AR7 scoping meeting experts (deadline 6th June)
- Planning for AR7 scoping meeting, Dec 2024, Malaysia (tbc)
- Preparations for SR Cities (call for authors Aug 2024 tbc)

The choices and actions implemented in this decade will have impacts now and for thousands of years

IPCC AR6 SYR

Photo: R. Vautard, Saint Sorlin Glacier after a winter high-altitude rain-on-snow episode

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INTERGOVERNMENTAL PANEL ON climate change

THANK YOU
FOR YOUR ATTENTION

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