

## All landscapes freezeline shift

Raster dataset WGS84, 30s resolution, for the WWF/USAID Asian High Mountains Project.

### Summary:

Covers all six priority snow leopard landscapes. Each number corresponds to the number of months that are no longer below zero (mean monthly temperatures) under projected climate change.

### Description:

The map illustrates how the spatial footprint of the freeze frontier is expected to change under projected temperature rise to mid-century. The freeze line is an indicator of the average timing of snowfall and snow and ice-melt, subsequent water availability, and trends in glacier and permafrost coverage. It is also an indicator of phenological processes such as the timing of green-up and leaf-fall, breeding and birthing, and animal movements. Seasonal changes can selectively impact species, ultimately affecting the composition of vegetation and animal communities in the landscape.

### Data Sources:

*Guardians of the Headwaters, Vol. 2: Mapping Biodiversity, Water, and Climate in Six Snow Leopard Landscapes.*, (Forrest et al, 2017) [www.thirdpolegeolab.org](http://www.thirdpolegeolab.org) Summary: <http://www.thirdpolegeolab.org/files/resources/websnowleopard.pdf>

*Current Mean Monthly Temperatures*, based on historic WorldClim, 30s resolution (Hijmans et al. 2005)

*Climate Change in the Snow Leopard Landscapes of Asia's High Mountains* (Peters et al. 2017) [http://www.thirdpolegeolab.org/files/resources/edited-wwf-ahm-tech\\_layout-final-spreads\\_1219.pdf](http://www.thirdpolegeolab.org/files/resources/edited-wwf-ahm-tech_layout-final-spreads_1219.pdf)

### Technical detail and analysis:

Bhutan	<a href="http://www.thirdpolegeolab.org/files/resources/bhutan_landscape_lowres.pdf">http://www.thirdpolegeolab.org/files/resources/bhutan_landscape_lowres.pdf</a>
Sikkim	<a href="http://www.thirdpolegeolab.org/files/resources/sikkim-landscape_lowres.pdf">http://www.thirdpolegeolab.org/files/resources/sikkim-landscape_lowres.pdf</a>
Eastern Nepal	<a href="http://www.thirdpolegeolab.org/files/resources/eastern-nepal-landscape_lowres.pdf">http://www.thirdpolegeolab.org/files/resources/eastern-nepal-landscape_lowres.pdf</a>
Karakoram-Pamir	<a href="http://www.thirdpolegeolab.org/files/resources/pamir-karakoram-landscape_lowres.pdf">http://www.thirdpolegeolab.org/files/resources/pamir-karakoram-landscape_lowres.pdf</a>
Central Tien Shan	<a href="http://www.thirdpolegeolab.org/files/resources/central-tien-shan-landscape_lowres.pdf">http://www.thirdpolegeolab.org/files/resources/central-tien-shan-landscape_lowres.pdf</a>
South Gobi	<a href="http://www.thirdpolegeolab.org/files/resources/south-gobi-landscape_lowres.pdf">http://www.thirdpolegeolab.org/files/resources/south-gobi-landscape_lowres.pdf</a>