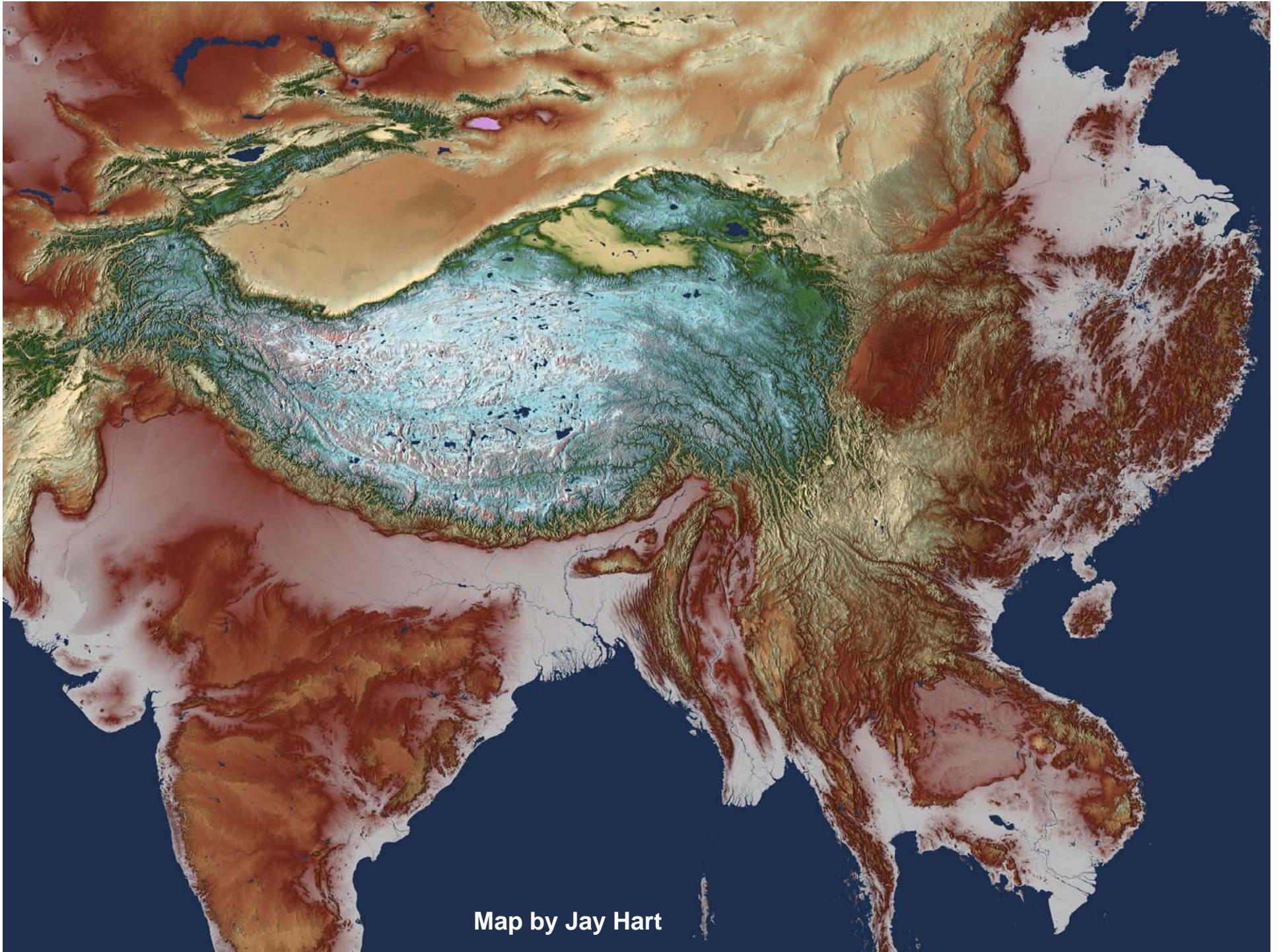


# Searching for Grass and Water

Rangeland Ecosystem Sustainability  
and  
Climate Change on the Tibetan Plateau

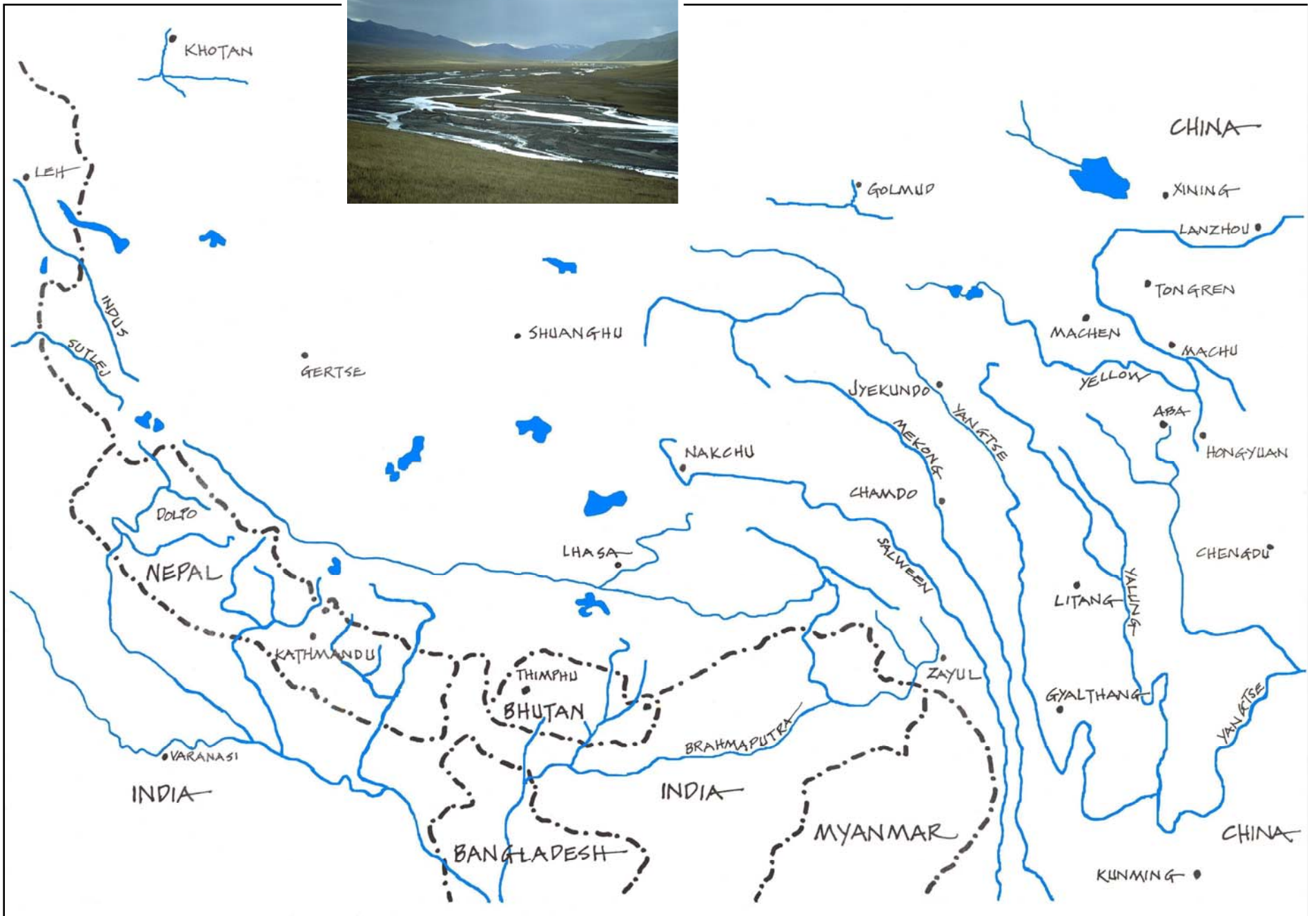
Daniel Miller





Map by Jay Hart





Map by C. Gay and D. Miller



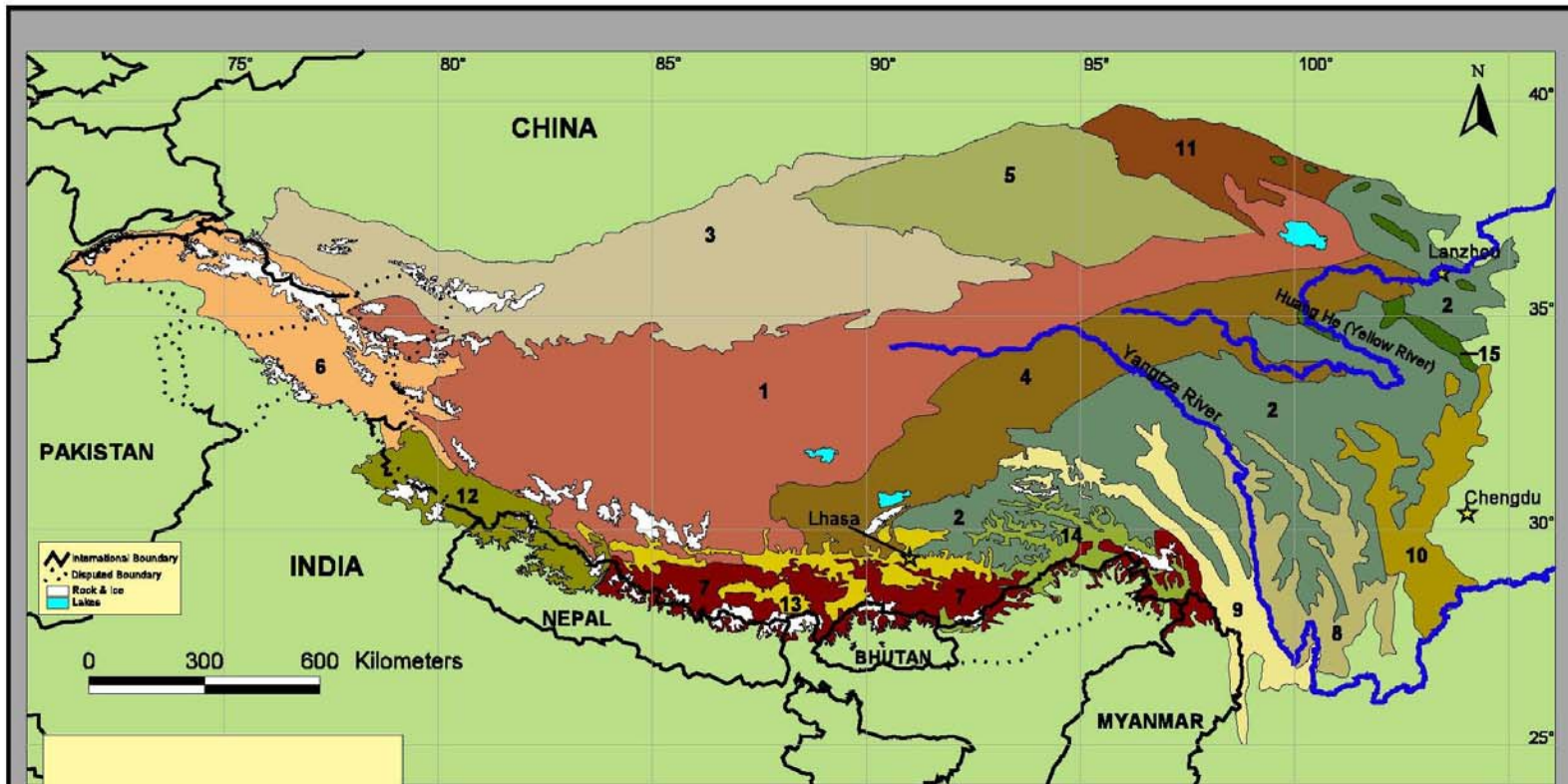
NASA/Goddard Space Center, Scientific Visualization Studio



New views on how we “see” and interpret the Tibetan Plateau landscape are required.



## Ecoregions of the Tibetan Plateau



### Ecoregions:

- |   |  |
|---|--|
| 1 - Central Tibetan Plateau Alpine Steppe             | 9 - Nujjiang - Langcang Gorge Alpine Conifer Forests |
| 2 - Southeast Tibetan Alpine Shrub and Meadows        | 10 - Qionglai - Minshan Conifer Forests              |
| 3 - Northern Tibet - Kunlun Mountain Desert           | 11 - Qilian Mountains Subalpine Meadows              |
| 4 - Tibetan Plateau Alpine Shrub and Meadows          | 12 - Western Himalayan Alpine Shrub and Meadows      |
| 5 - Qaidam Basin Desert                               | 13 - Yarlung Zangpo Alpine Steppe                    |
| 6 - Karakorum - Western Tibetan Plateau Alpine Steppe | 14 - Northeast Himalayan Subalpine Conifer Forests   |
| 7 - Eastern Himalayan Alpine Shrub and Meadows        | 15 - Qilian Mountains Conifer Forests                |
| 8 - Hengduan Mountains Subalpine Shrub and Meadows    |  |







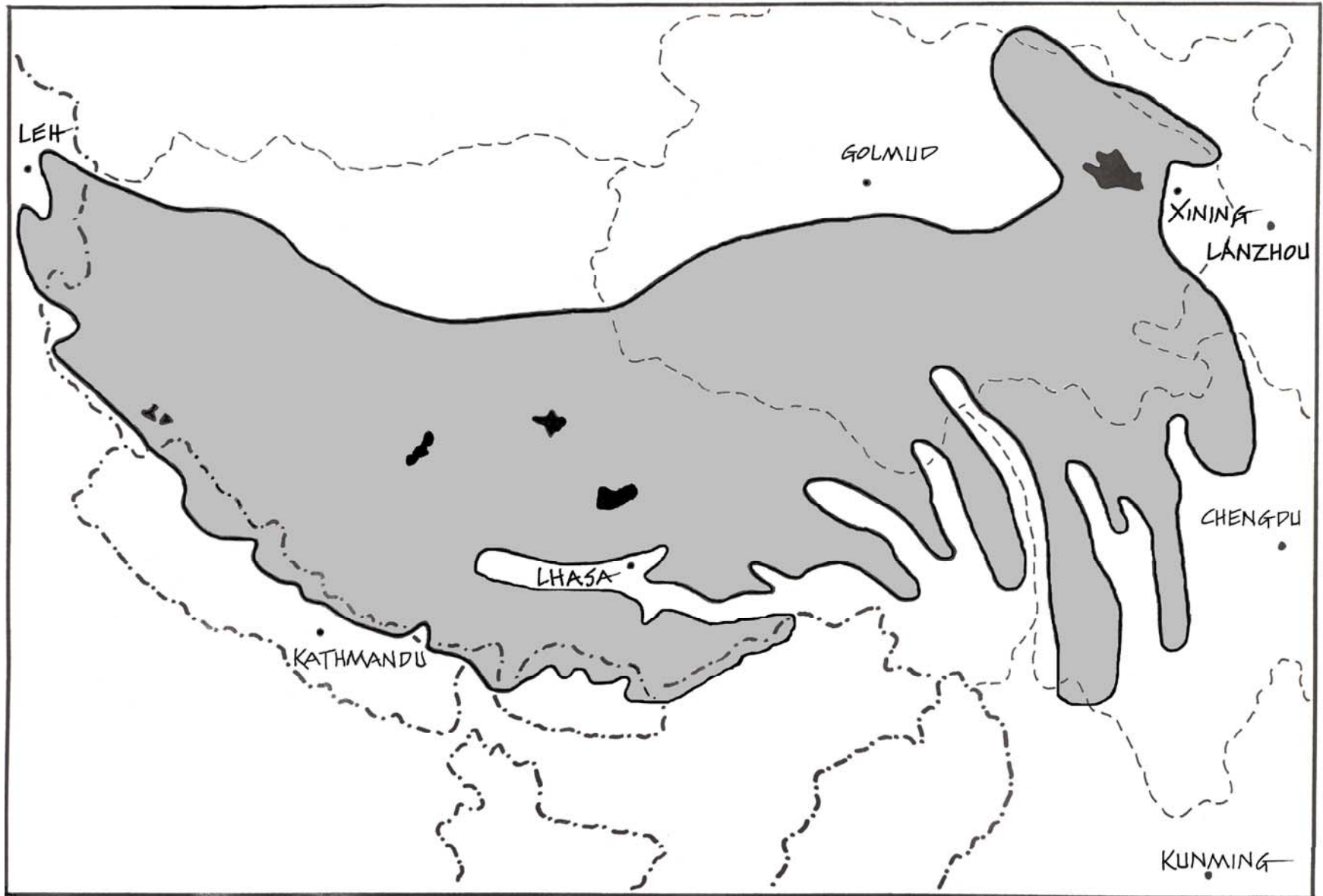








## Map: The World of Tibetan-Speaking Nomads



Map by Daniel Miller and Charles Gay



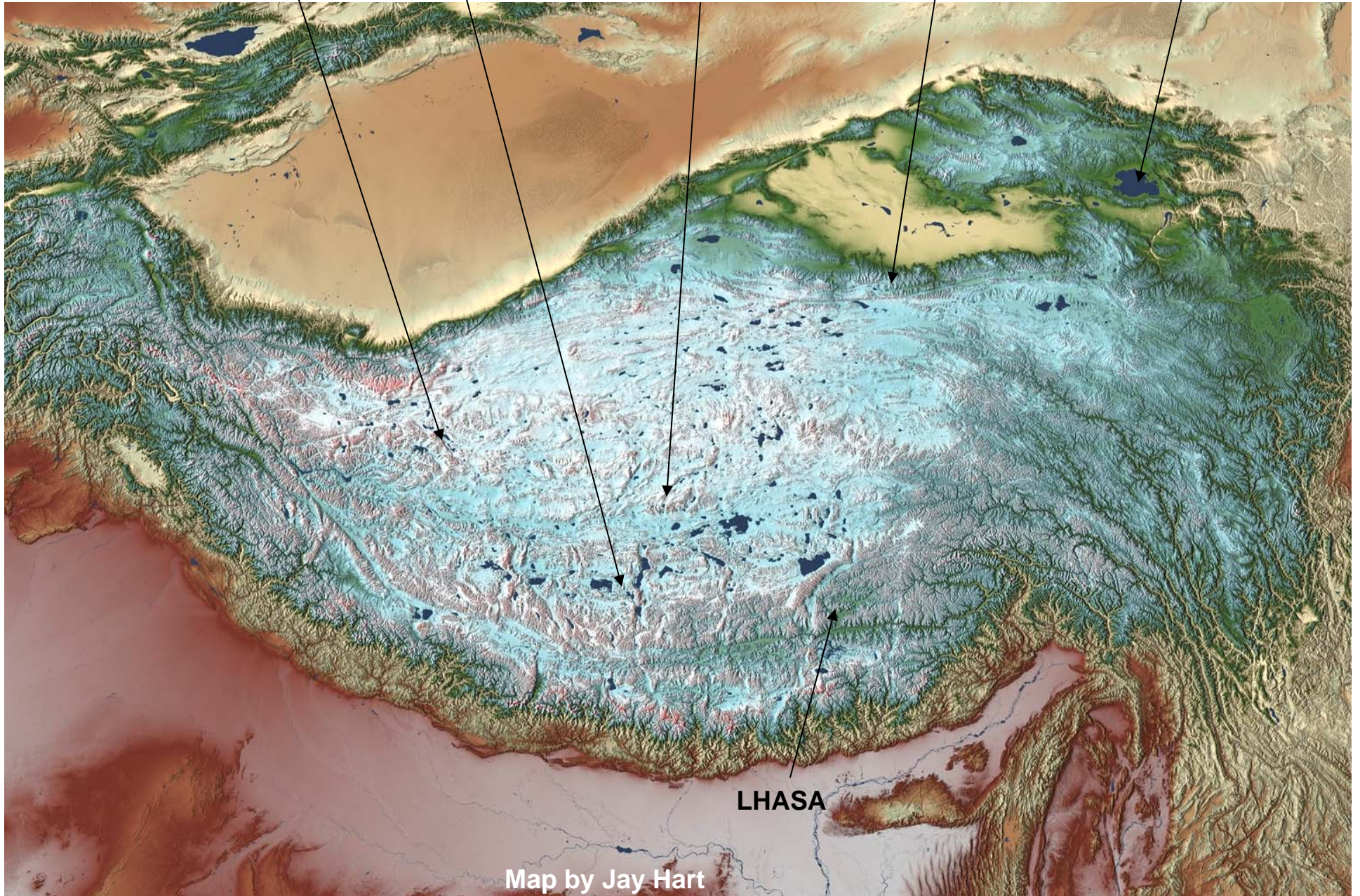
**Aru Tso**

**Phala**

**Chang Tang Reserve**

**Wild Yak Valley**

**Qinghai Lake**



**LHASA**

Map by Jay Hart

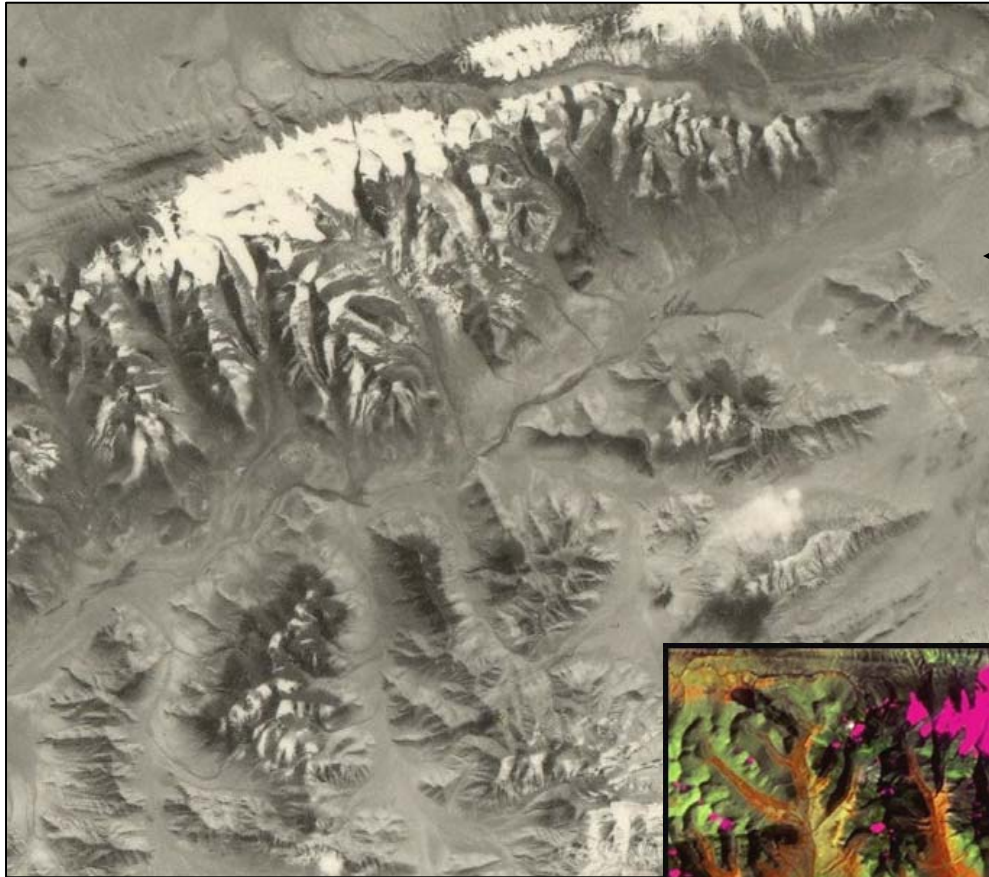






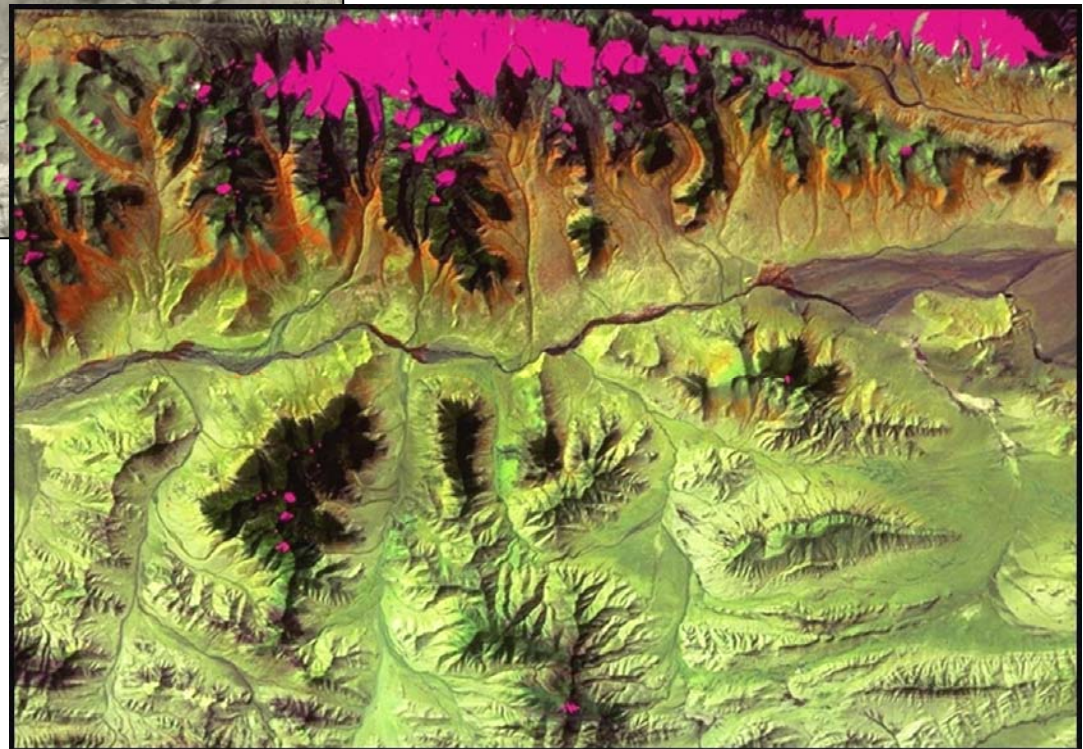


## Wild Yak Valley



← Large Format Camera (LFC) image

Landsat Thematic Mapper image



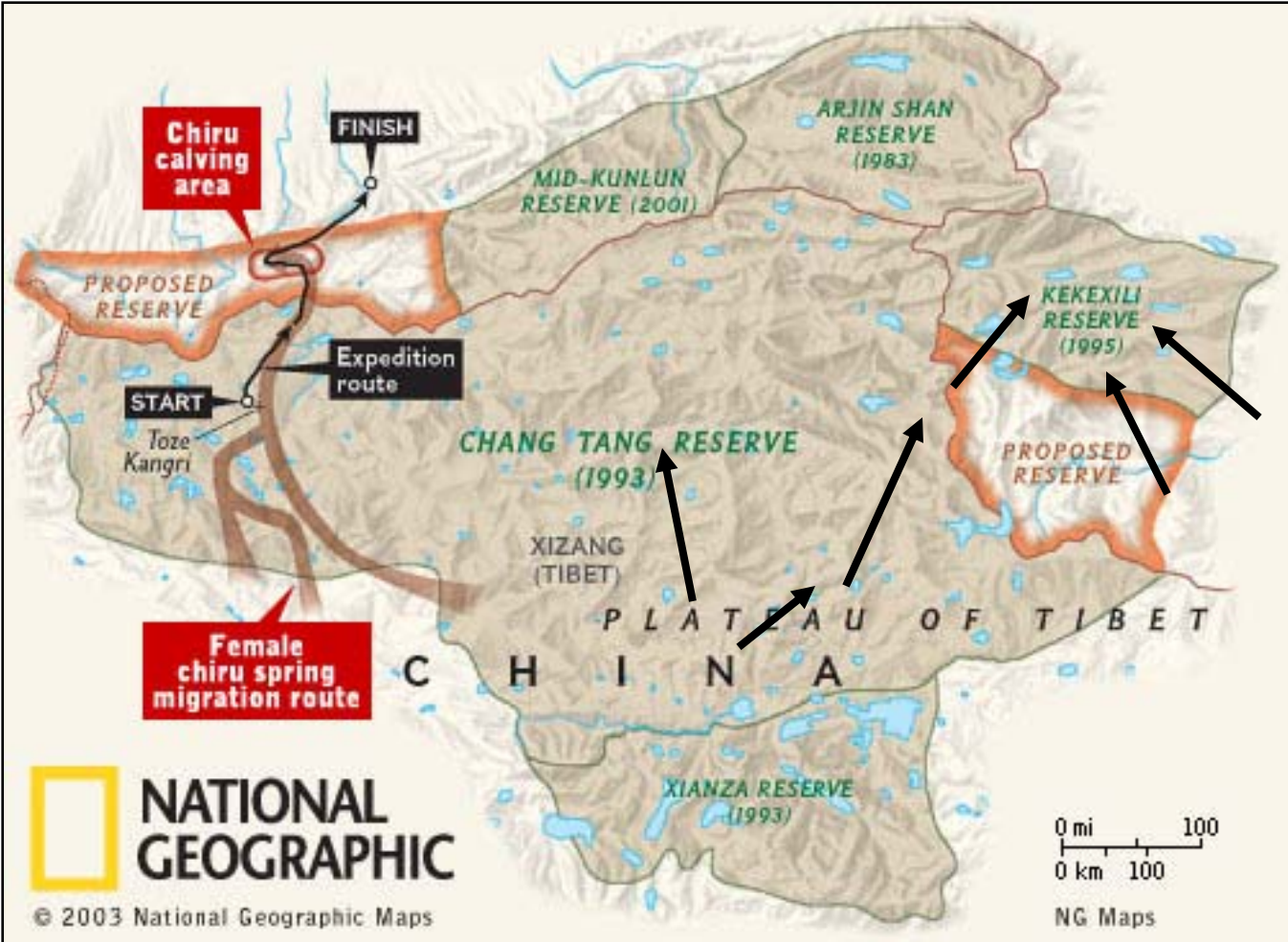
*The bright orange colored areas in the Landsat image are Kobresia dominated sedge meadows, a preferred habitat of wild yak in the summer.*



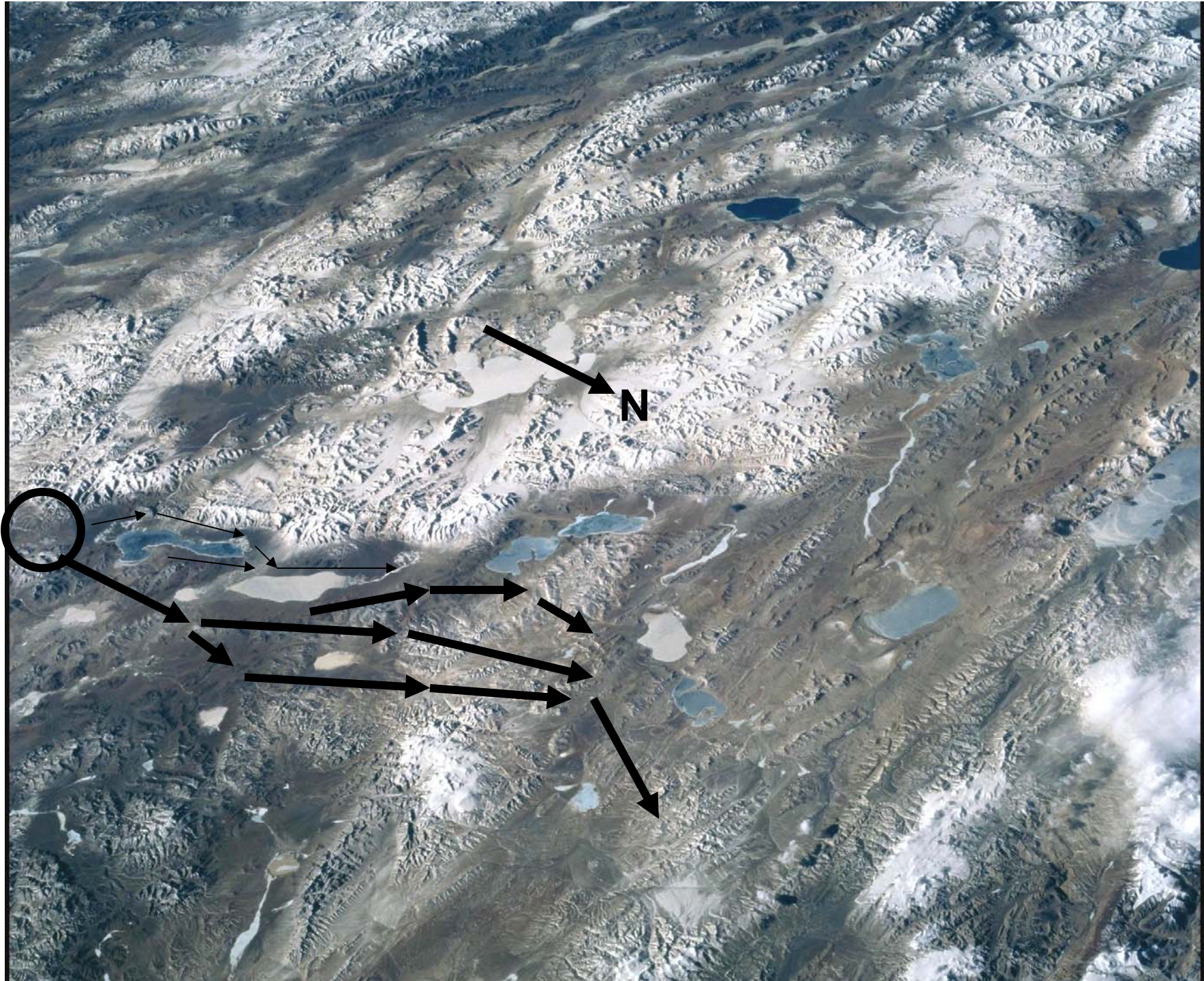


















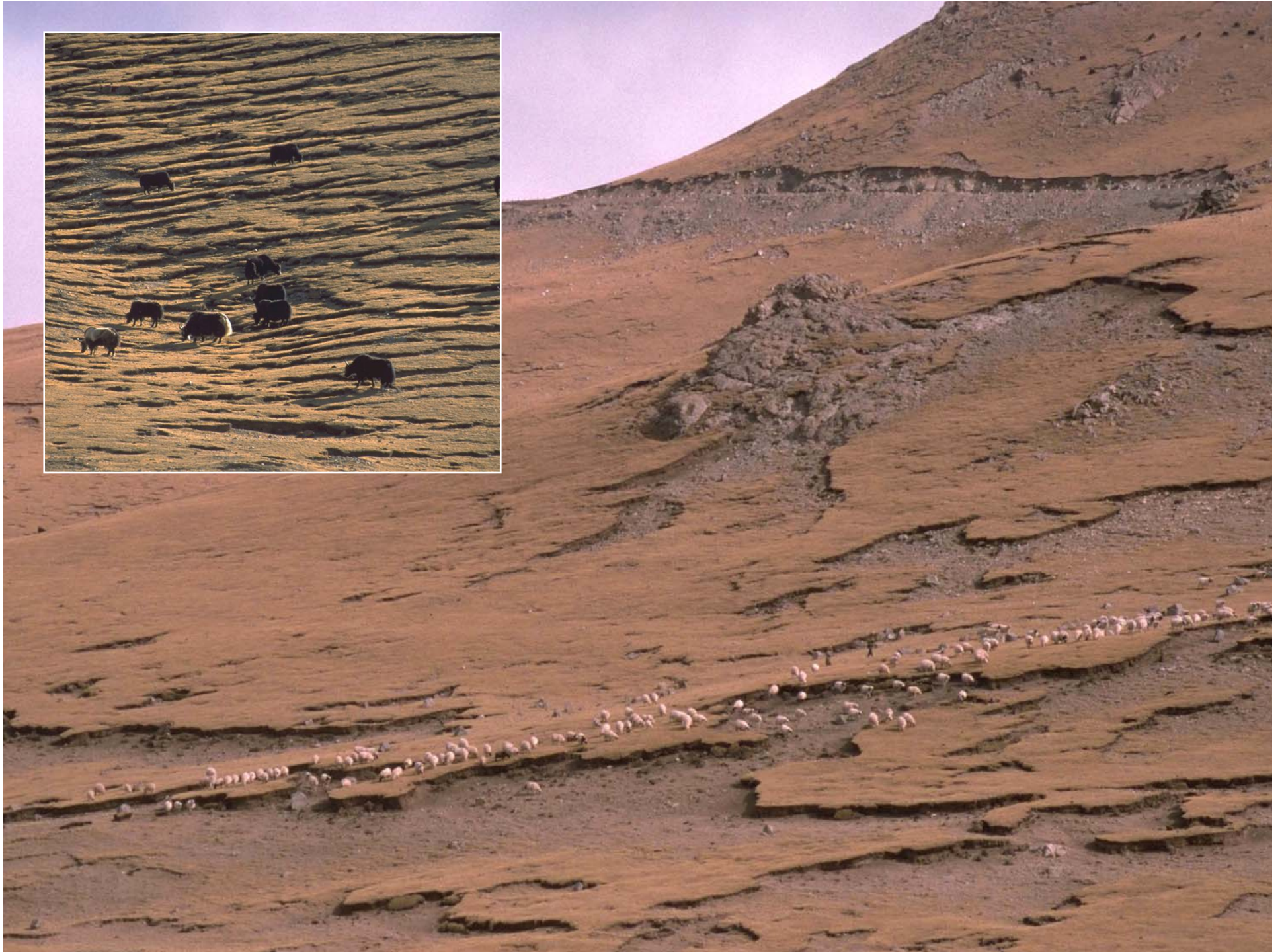




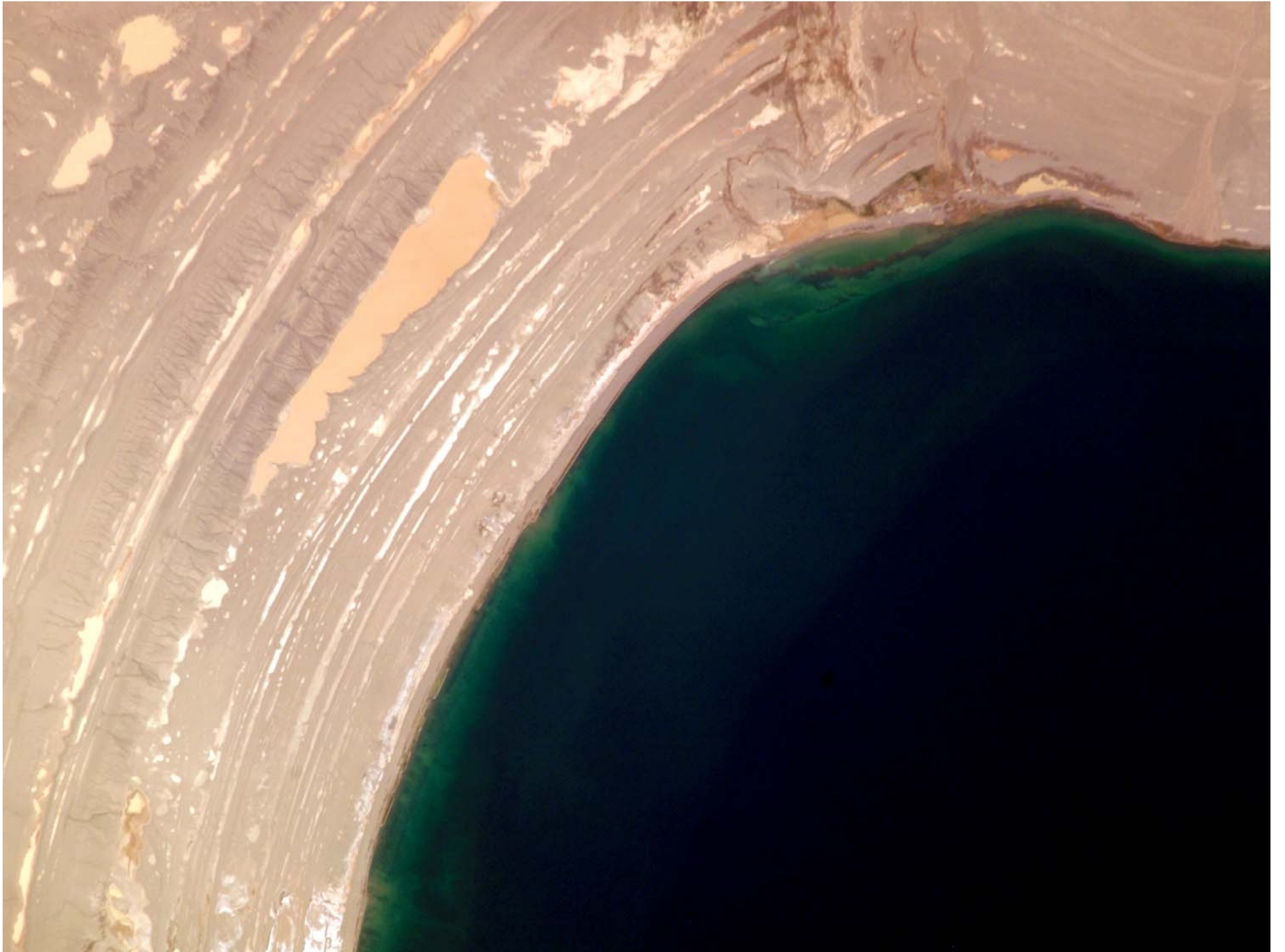






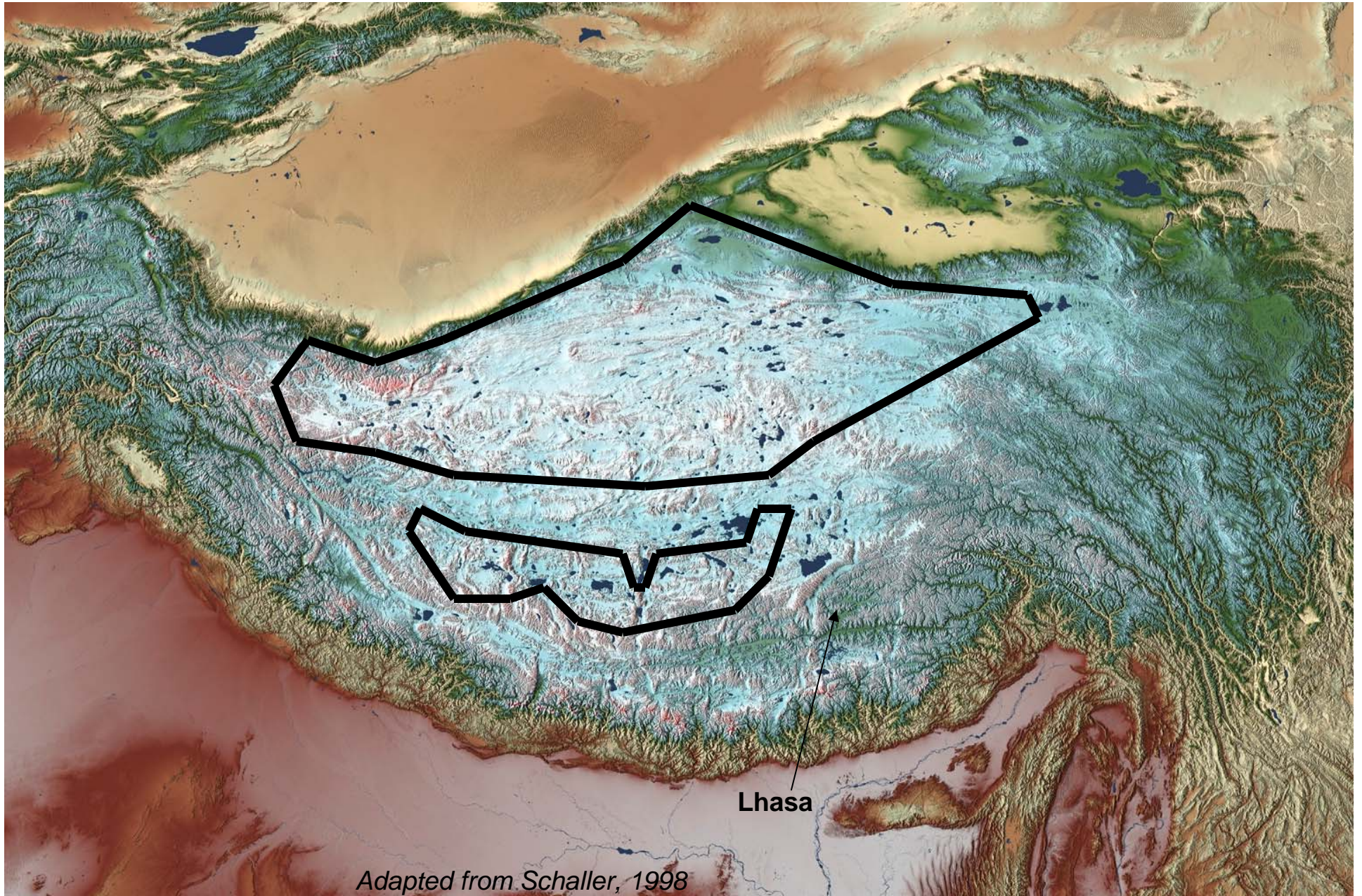








## Distribution of Tibetan antelope

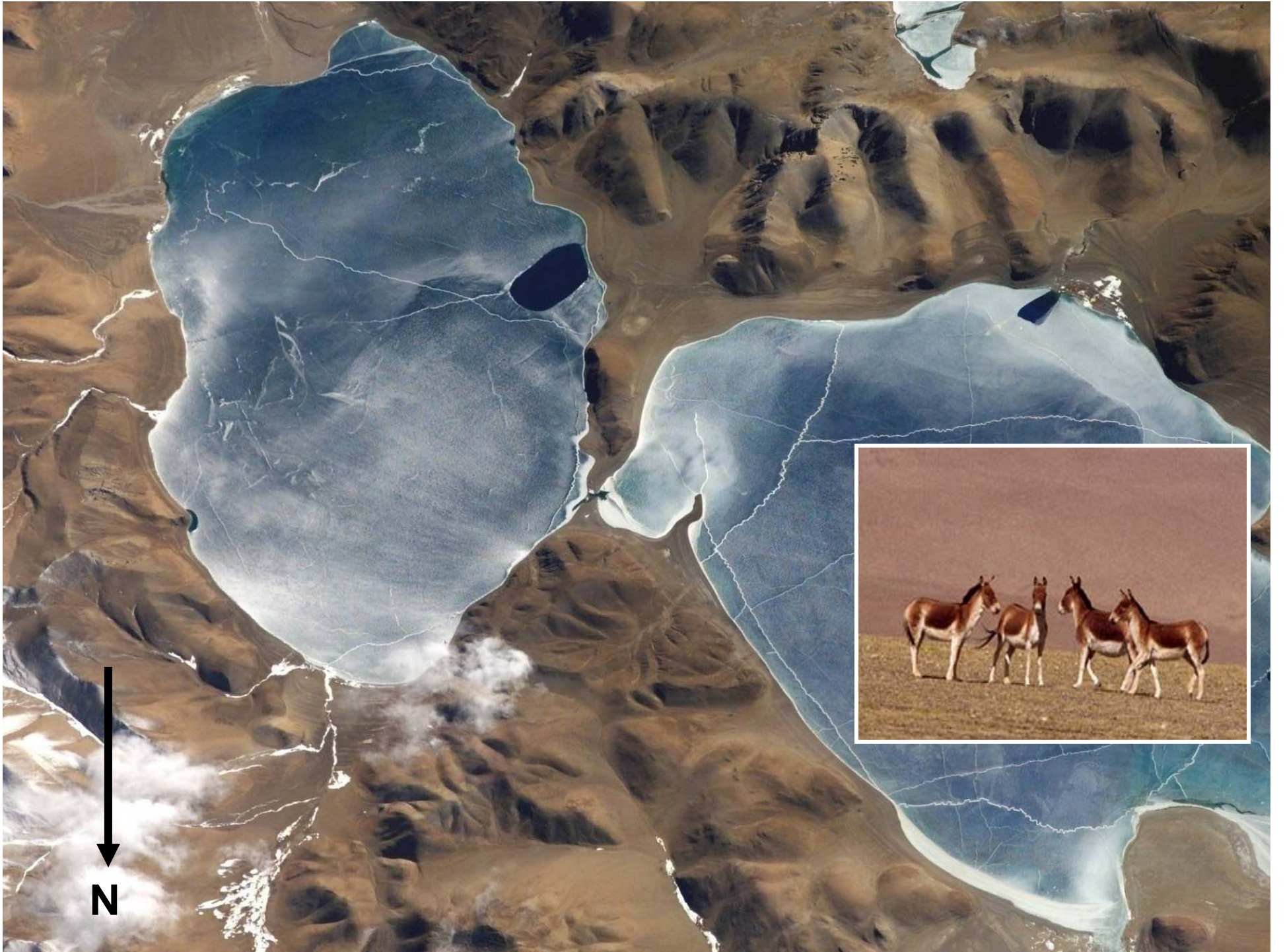






**Landsat Thematic Mapper Image of the Wild Yak Valley**

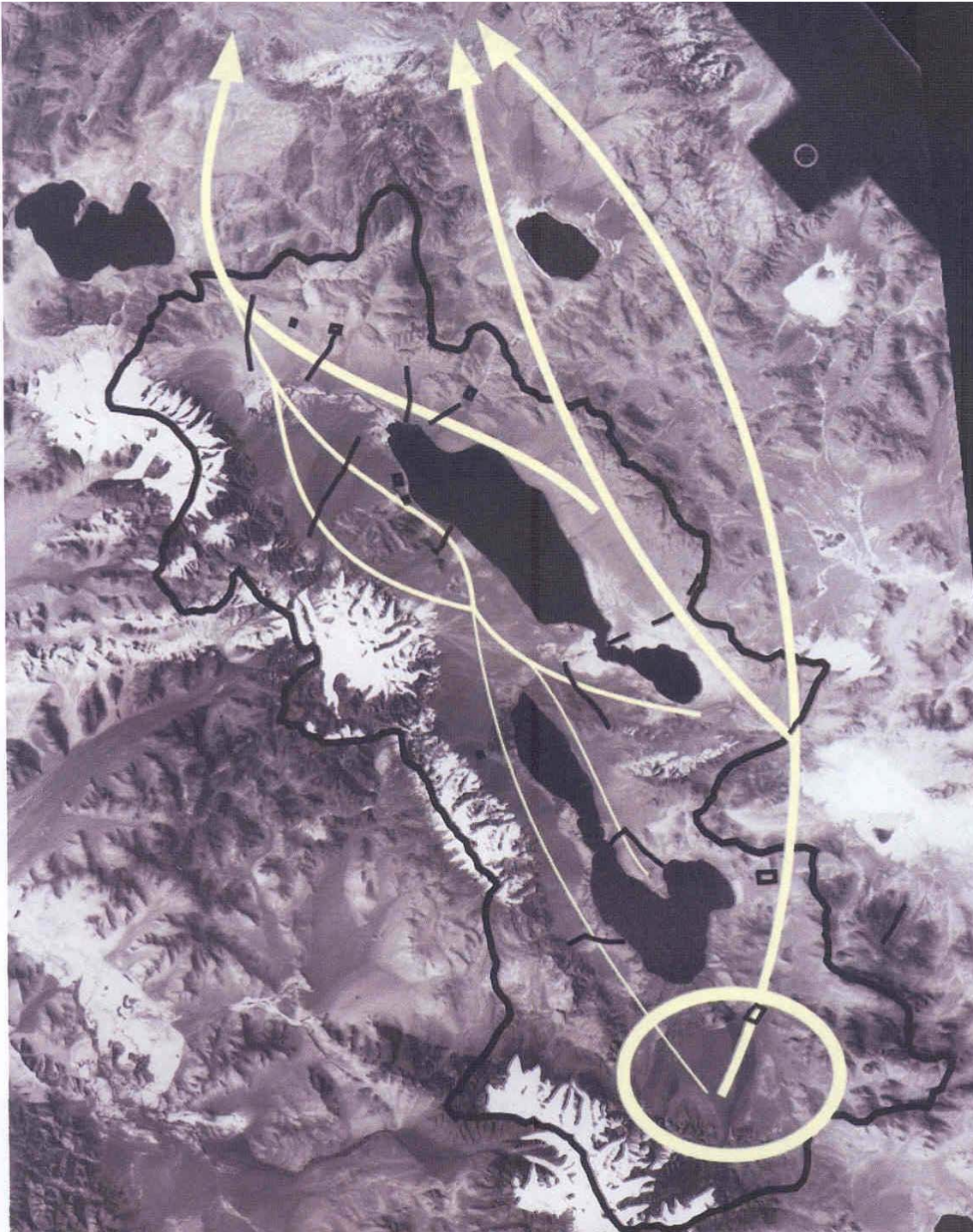












The Aru Basin catchment (black boundary), with Aru Lake (lower) and Memar Lake (upper) and 6,000 m Aru Mountains forming its western boundary. Fences constructed within the basin in 2006 and 2007 are shown as short lines or rectangles. The southern end of the basin is an important wintering and spring migration staging area for Tibetan antelope (oval), and the antelope migration routes through the basin are shown, with line thickness signifying importance.

*Courtesy of Dr. Joe Fox*







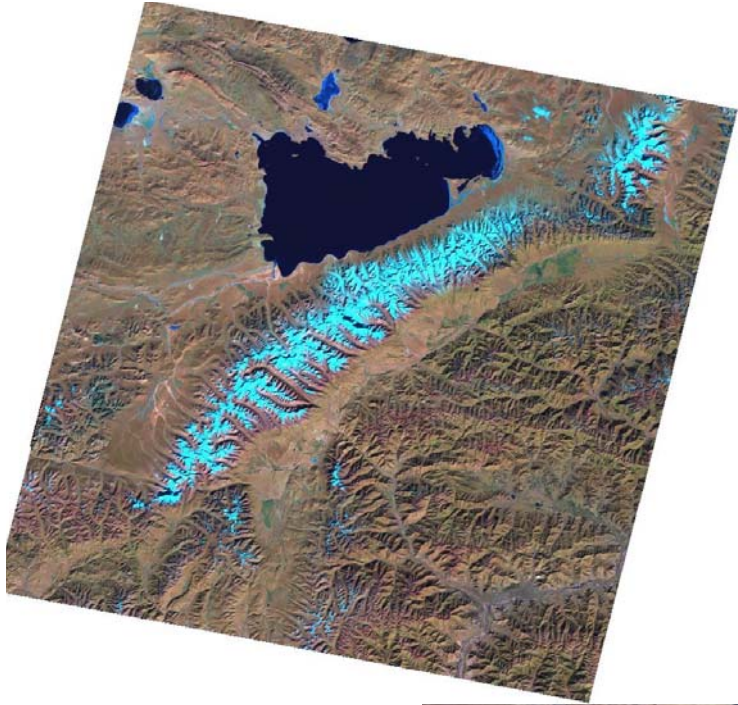


This core of the earth  
This heart of the world  
Fenced round by snow  
The headland of all rivers  
Where the mountains are high  
and the land is pure.

*9<sup>th</sup> century document describing Tibet*








*Top:*  
Landsat image  
December 18, 2000



*Right:*  
Astronaut  
photograph  
December 4, 1988



An aerial photograph of the Himalayan mountain range, showing a vast expanse of rugged, snow-capped peaks and valleys. The terrain is characterized by deep, dark shadows and bright highlights on the snow. In the center, a prominent valley is visible, which is identified as Mustang, Nepal. The view is from a high altitude, looking south from the Tibetan Plateau. The sky is clear, and the overall scene is one of immense scale and natural beauty.

**North is not  
always at the top!**

*Astronaut photo of the Himalaya with Mustang, Nepal in the center.  
View is from over the Tibetan Plateau looking south.*



# Scientific information and indigenous knowledge

