NGEA 01 2019
PERIGLACIAL ENVIRONMENTS

GLOBAL & NORDIC MOUNTAINS, SVALBARD, SIBIREA, GREENLAND, ICELAND & ARCTIC NORTH AMERIKA
Areas with an important influence of cold air and cold ground temperatures, in daily, seasonal or annual pattern. Creating frozen ground – temporarily- seasonal frost or permafrost
Nordic Mountains
The HIMALAIAS, the ALPS, the ANDES etc.
GREENLAND
SIBIRIA
TIBETAN PLATEAU
Climate change and Increased environmental pressure

- Minerals
- Fishing
- Tourism
- Defence inst.
- Infrastructure
WHAT IS TYPICAL FOR THE PERIGLACIAL ENVIRONMENT?
RAPID PHYSICAL WEATHERING
MELTING OF PERMAFROST
RAPID SLOPE PROCESSES
STRONG WIND ACTION
SPECIAL STREAM PATTERNS
SEA AND LAKE ICE
SENSIBILITY to CLIMATIC VARIABILITY OR CHANGES
What might be like this at temperatures $< 0^\circ C$
Might be like this at temp. > 0º C
One of the most characteristic features of the periglacial environment is the presence of permafrost and various types of soil ice.
Thermokarst
GCM Projections - Arctic Surface Air Temperature

60N - Pole: Change from 1990-1999 mean

- Canadian Climate Centre (CCC)
- NCAR Climate System Model (CSM)
- Geophysical Fluid Dynamics Laboratory (GFDL)
- Hadley Centre Climate Model 3 (UKMO)
- European Centre, Hamburg (ECHAM)
Flow chart of permafrost model.

List of computed variables:

\( H_{sn} \) - Snow depth;
\( T_s \) – Surface temperature;
\( SFI \) – Surface Frost Index;
\( Z_{th} \) – Depth of seasonal thaw;
\( dZ_{th}^r \) – Relative change of thaw depth from baseline period,
\[
dZ_{th}^r = \frac{Z_{th}(t_1) - Z_{th}(t_0)}{Z_{th}(t_0)}
\]
LET US CHECK SOME OF THE PROCESSES