Tree Line Migration

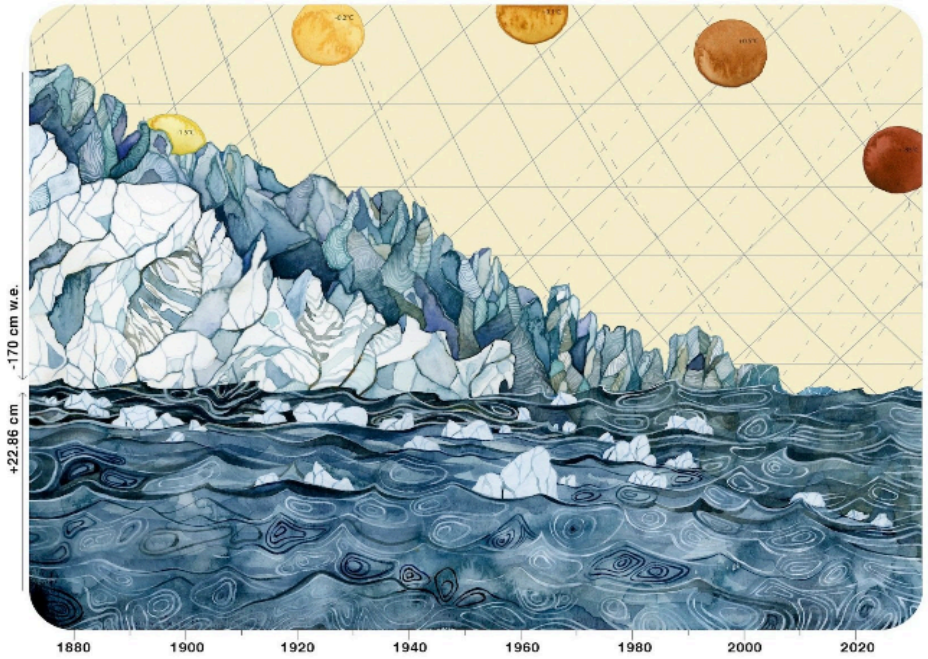
Jill Pelto

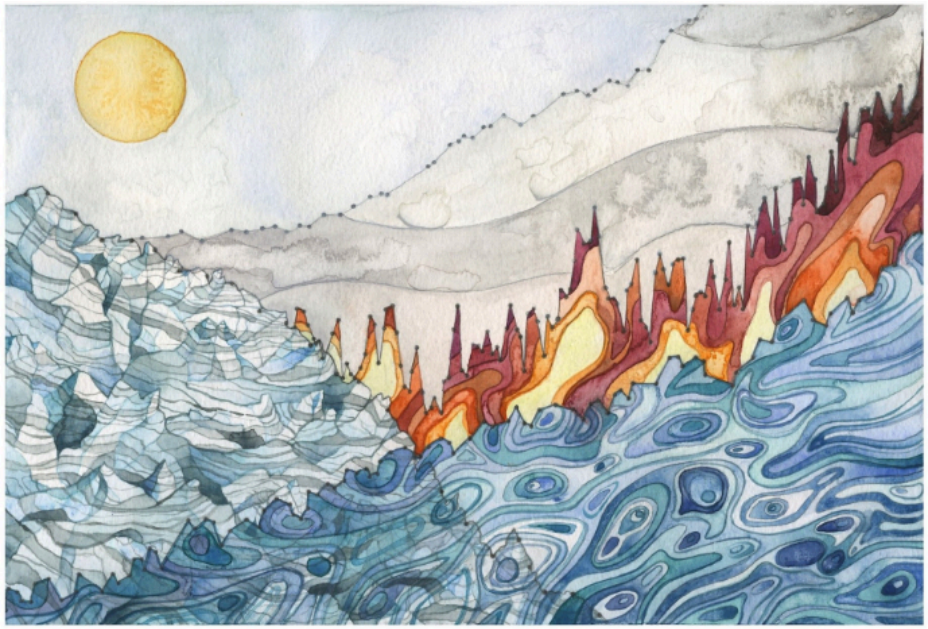
Watercolor and Colored Pencil, 2021

Collaboration with scientist Dr. Laura Parducci

Climate change artist Jill Pelto has been collaborating with an international science team for the last few years. The team is based in Sweden, Norway, and Italy. The primary collaborator on this project is Dr. Laura Parducci, a paleo-ecologists currently based in Rome. Jill created five paintings for the team that tell a story about how Laura and her co-workers do their field research, what they find, how they use the data, and why that's important today.

This painting is the fifth and final painting in the series — depicting how Norway Spruce may shift habitat zones as the climate changes rapidly today. The lower portion shows a dense forest of spruce — they stop growing on the mountain side at the tree line (the edge of their habitat.) I chose to make this line a graph of global temperature data from 1880 to 2020. Above this line there may be a few trees, these are usually very old and worn looking (krummholz). These are typically clonal trees, growing from an old root system that has birthed trees for hundreds or even many thousands of years. They persist from times when perhaps the tree line was higher under a different climate, living proof of the resilience of species like Norway Spruce. As temperatures warm and precipitation zones shifts, species like the spruce will have to migrate or adapt to the new conditions. One response may be growing at higher elevations and latitudes.





Landscape of Change

Jill Pelto

Watercolor and Colored Pencil, 2015

Landscape of Change uses data about sea level rise, glacier volume decline, increasing global temperatures, and the increasing use of fossil fuels. These data lines compose a landscape shaped by the changing climate, a world in which we are now living.

References:

http://www.nasa.gov/sites/default/files/atoms/files/noaa_nasa_global_analysis_2015.pdf

http://wxshift.com/climate-change/climate-indicators/sea-level-rise

http://blogs.agu.org/fromaglaciersperspective/2015/08/20/disastrous-year-for-north-cascade-glacier-mass-balance-snowice-economy/

https://www.skepticalscience.com/antarctica-gaining-ice-intermediate.htm

http://instituteforenergyresearch.org/analysis/eia-forecast-fossil-fuels-remain-dominant-through-2040/

Overgrown

Jill Pelto

Watercolor and Colored Pencil, 2019

Collaboration with conservation organisation 'Wild Seed'

Overgrown depicts how the composition of Maine plant species may shift geographically as climate zones change. Four data lines cut across the image to represent the different climate scenarios projected from 2000-2100 by the World Climate Research Program. The data are high-low temperature projections that may determine which species thrive and where. The top of the work provides a scenario with which many are familiar. Here, plant species already common to Maine thrive. They include the Eastern white pine, red spruce, twin flower, bunch berry, and Canada lily. While these species also appear in the scenario on the bottom of the work, they appear in lower proportions due to decreased temperature suitability. Here, species commonly found further south begin to emerge and thrive where they had not before. They include the tulip tree, shooting star flower, and the crimson eyed rosemallow. This geographic shift in plant composition is largely dependent upon the amount and speed of atmospheric warming. As Maine residents bear witness to the plant species overgrown by others, the very idea of an ecological community will change.

To find out more about the data used, look at these two links:

https://www.ipcc-data.org/sim/gcm_monthly/AR5/index.html

https://www.gfdl.noaa.gov/coupled-physical-model-cm3/