

Lecture 1: Introduction

GES-441

Why Study Glaciers?

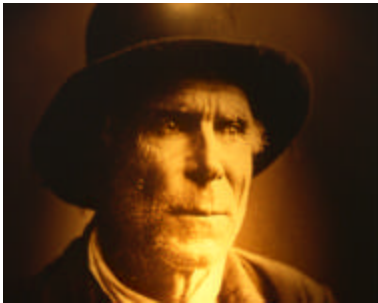
- Climate prediction
- Siting of landfills, roads, airstrips, dams
- Water resources - aquifers, hydroelectric power, irrigation, contaminant mitigation
- Sand and gravel resources
- Ecology - influence on vegetation, agriculture, animals, nutrition
- Mining – heavy metals, gold
- Human habitats - sea-level change, hazards, settlement patterns
- Economics and demographics - floods, property damage, siting of and types of roads, bridges

Glaciers as Part of a System

- Interactions with atmosphere through albedo, wind patterns/strength, temperature
- with ocean through sea level, circulation patterns, temperature, salinity
- with land through isostatic depression

Discovery of Ice Ages

- Flood Theory - “drift” deposited by icebergs on flood (Lyell, 1833)
- Perraudin - 1815 - mountaineer - expansion of Rhone Glacier



Jean Pierre Perraudin

- Venez - engineer - knew Perraudin - by 1829 called for expansion of ice out of Alps
- Charpentier - director of salt mines - 1829 convinced by Venez and Perraudin - originally against idea



Jean de Charpentier

- Agassiz - well-known scientist - converted by Charpentier and Venez. In 1837, presented Discourse at

Neuchatel with idea of major ice expansions and ice ages
Most major opposition gone by 1860s.



*Louis Agassiz in a portrait by Alfred Berthoud,
Reproduced in Imbrie and Imbrie, Ice Ages:
Solving the Mystery.*