

Data and Image,
Knowledge and Belief

**PICTURE THE ARCTIC:
CAPTURING THE STORY OF
ARCTIC CLIMATE CHANGE**

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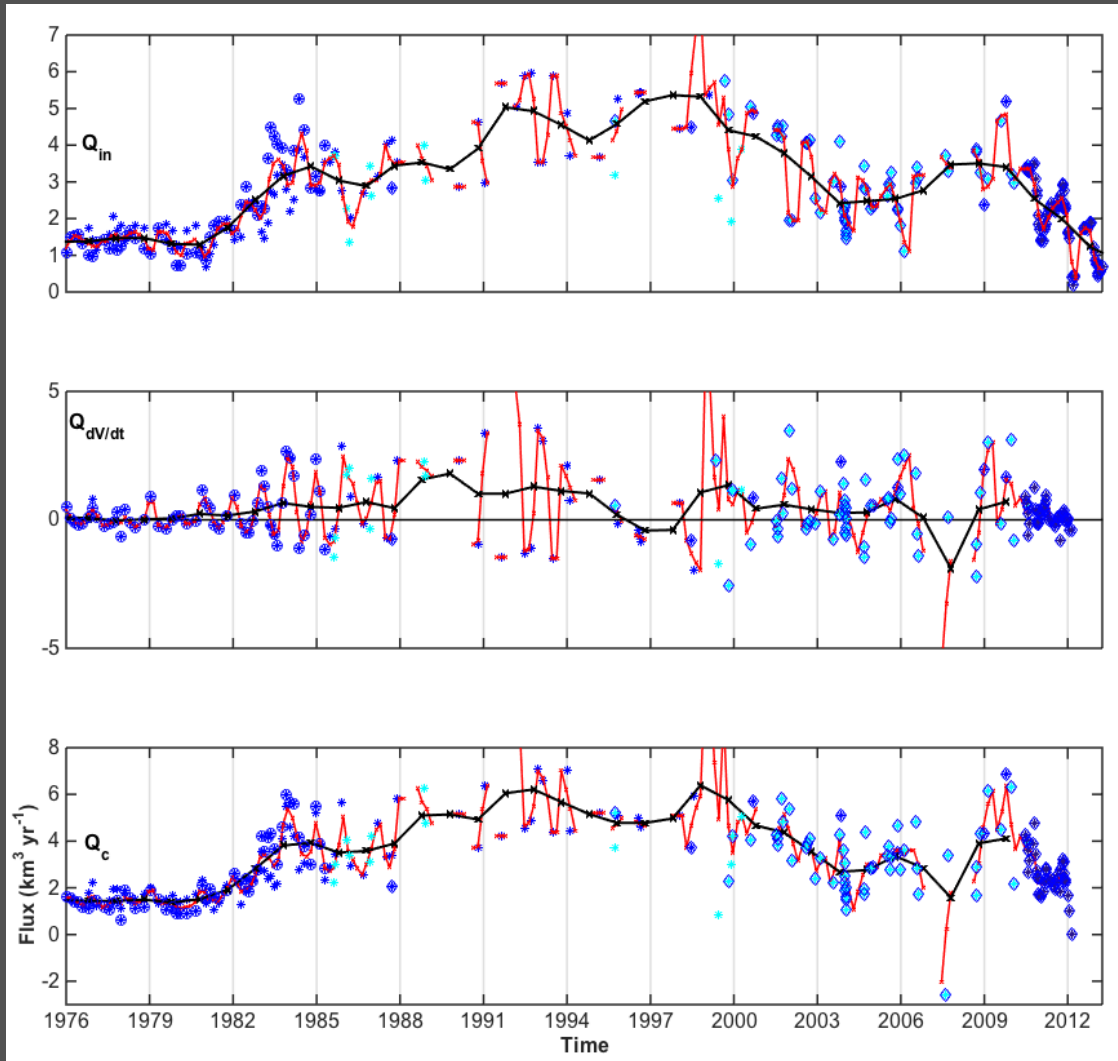
What do images do for us?

What do they convey that words do not, or cannot?

Beauty and inspiration



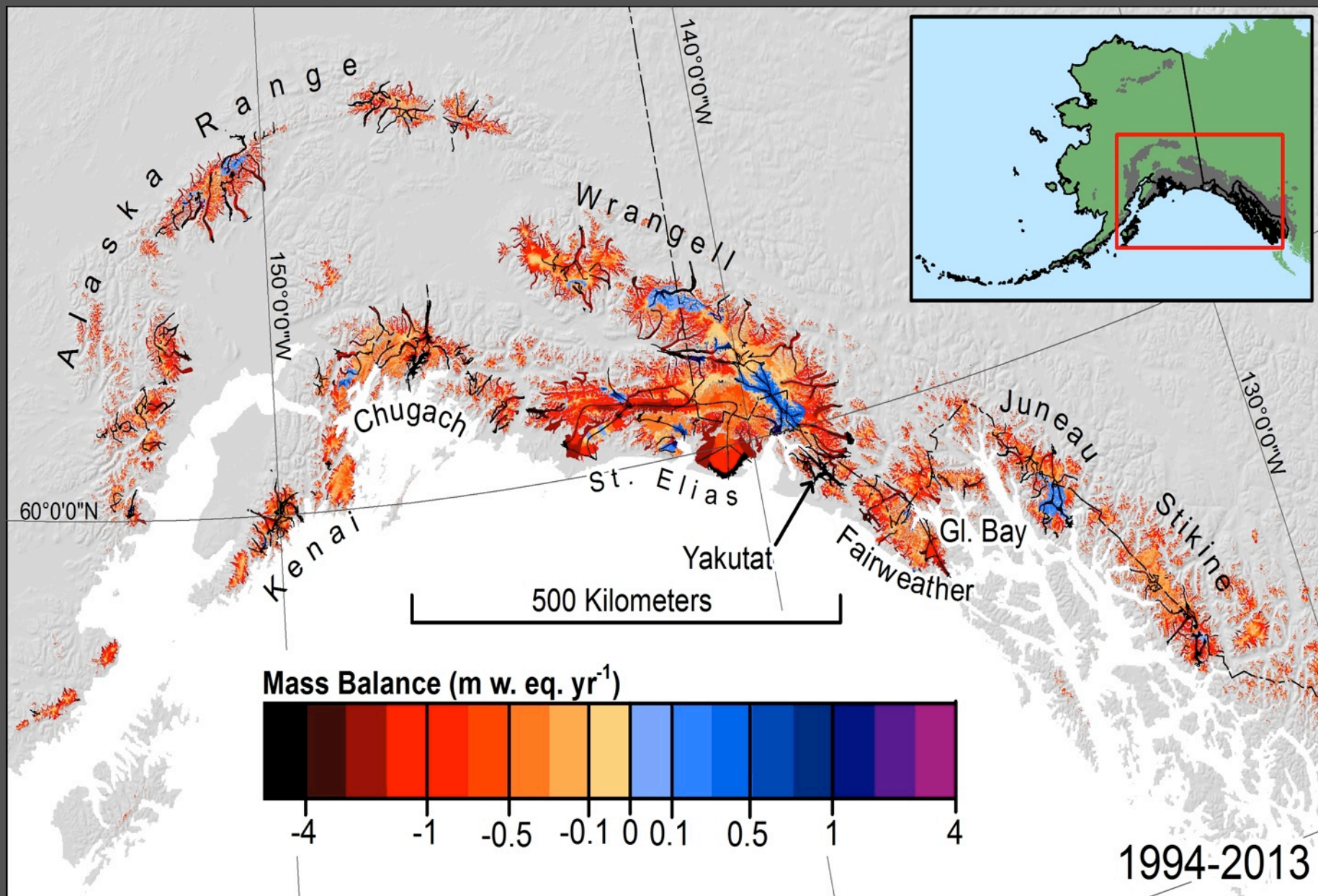
Columbia Glacier flux components, 1975 to 2012



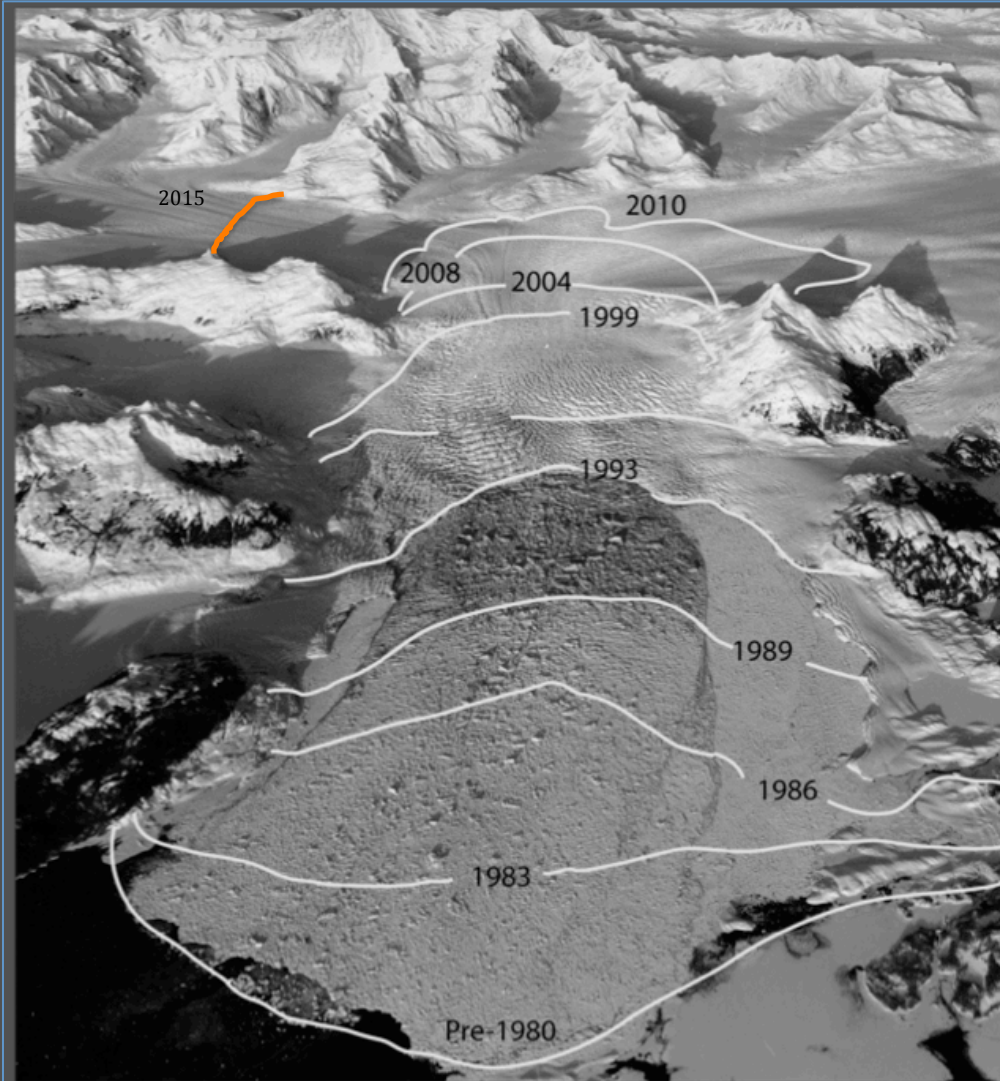
Quantitative
information and
knowledge

“A picture is worth 1000 words”...
Is it always?

There's a tension between
“knowing” and “believing”



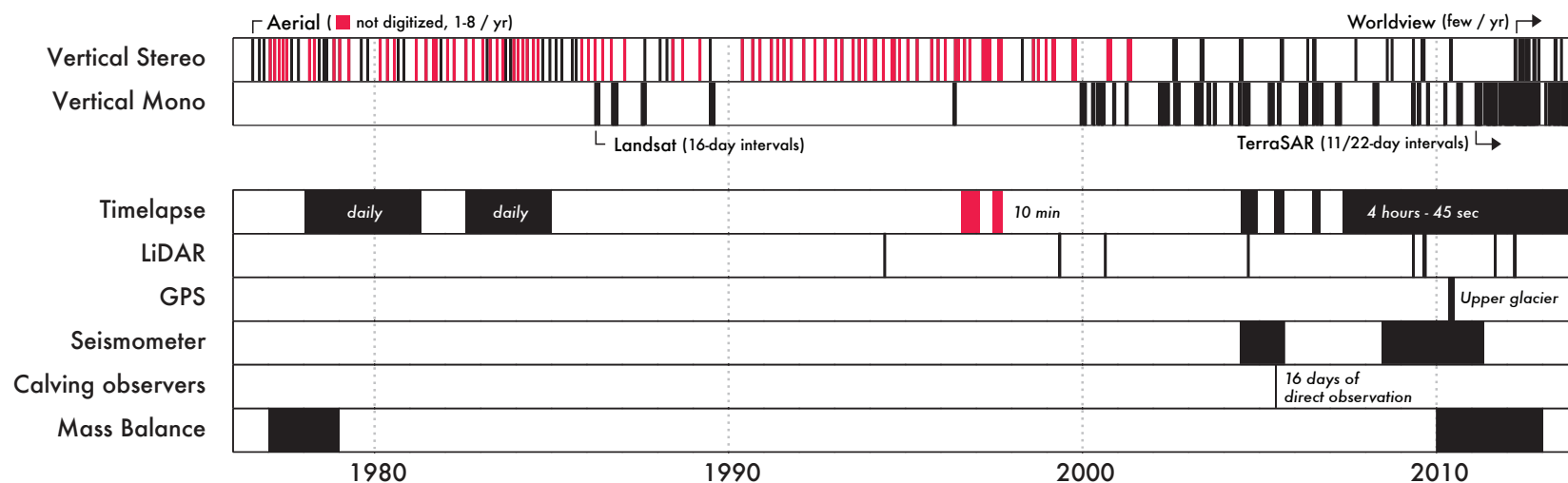
Columbia Glacier Retreat ca. 1984 - present



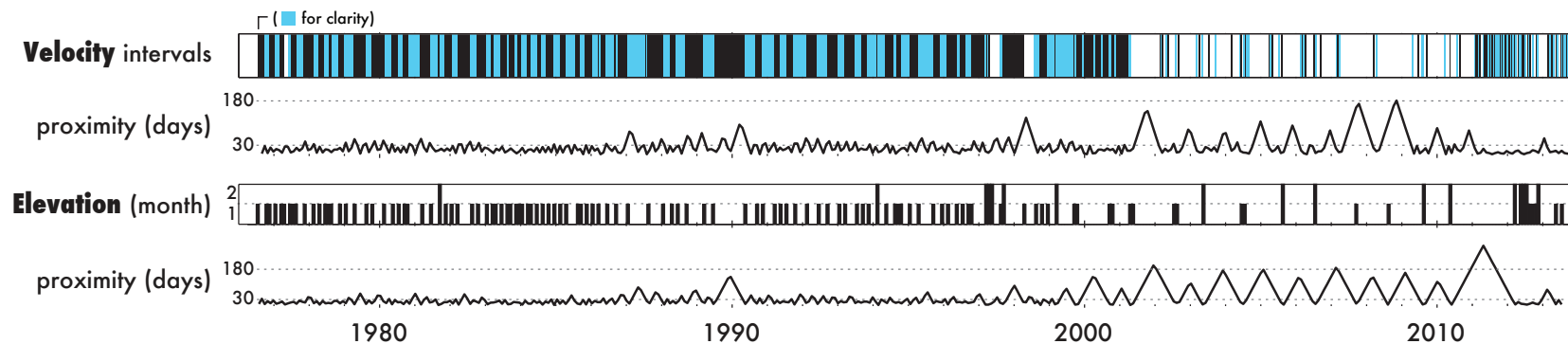
- 50% volume reduction in 30 years
- 1% GSLR (Berthier et al., 2010, McNabb et al., 2012)
- Extensive research legacy – most complete observations of important, often unresolved processes
- Especially valuable for long-term records and completeness for use in model validation

Data compilation

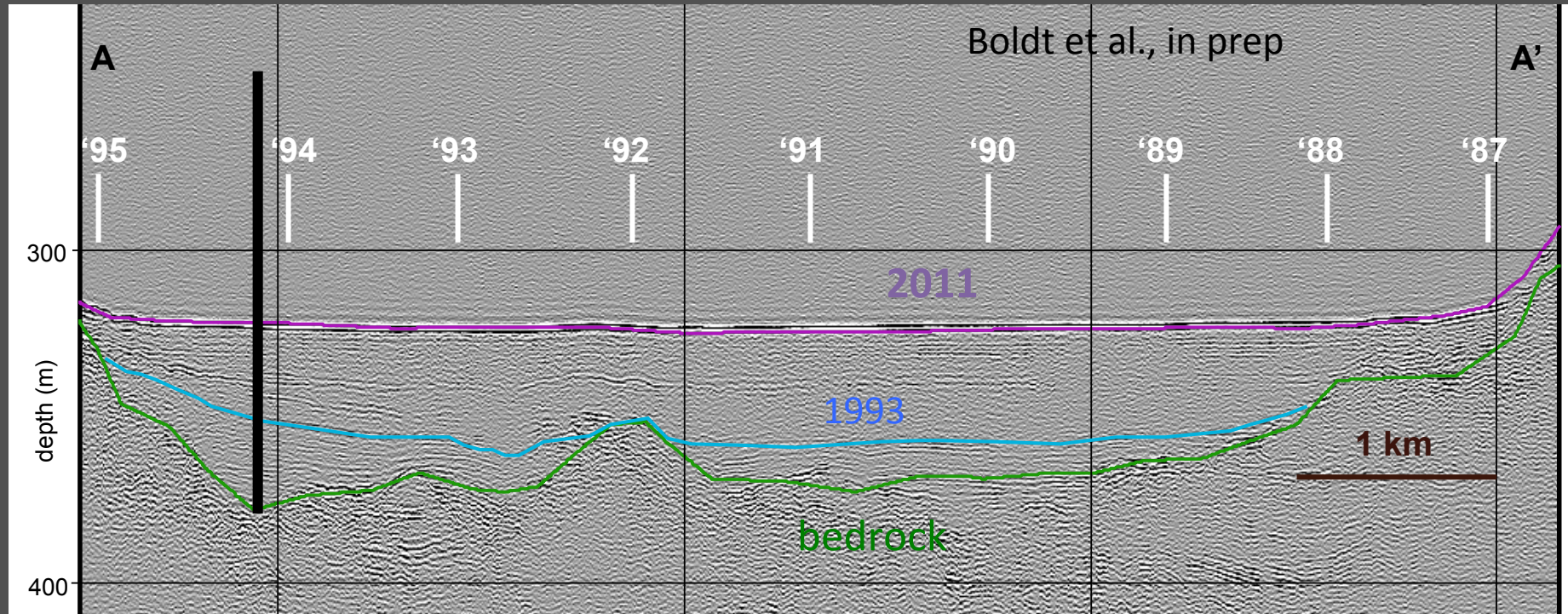
Instrumental Record



Data Timeline

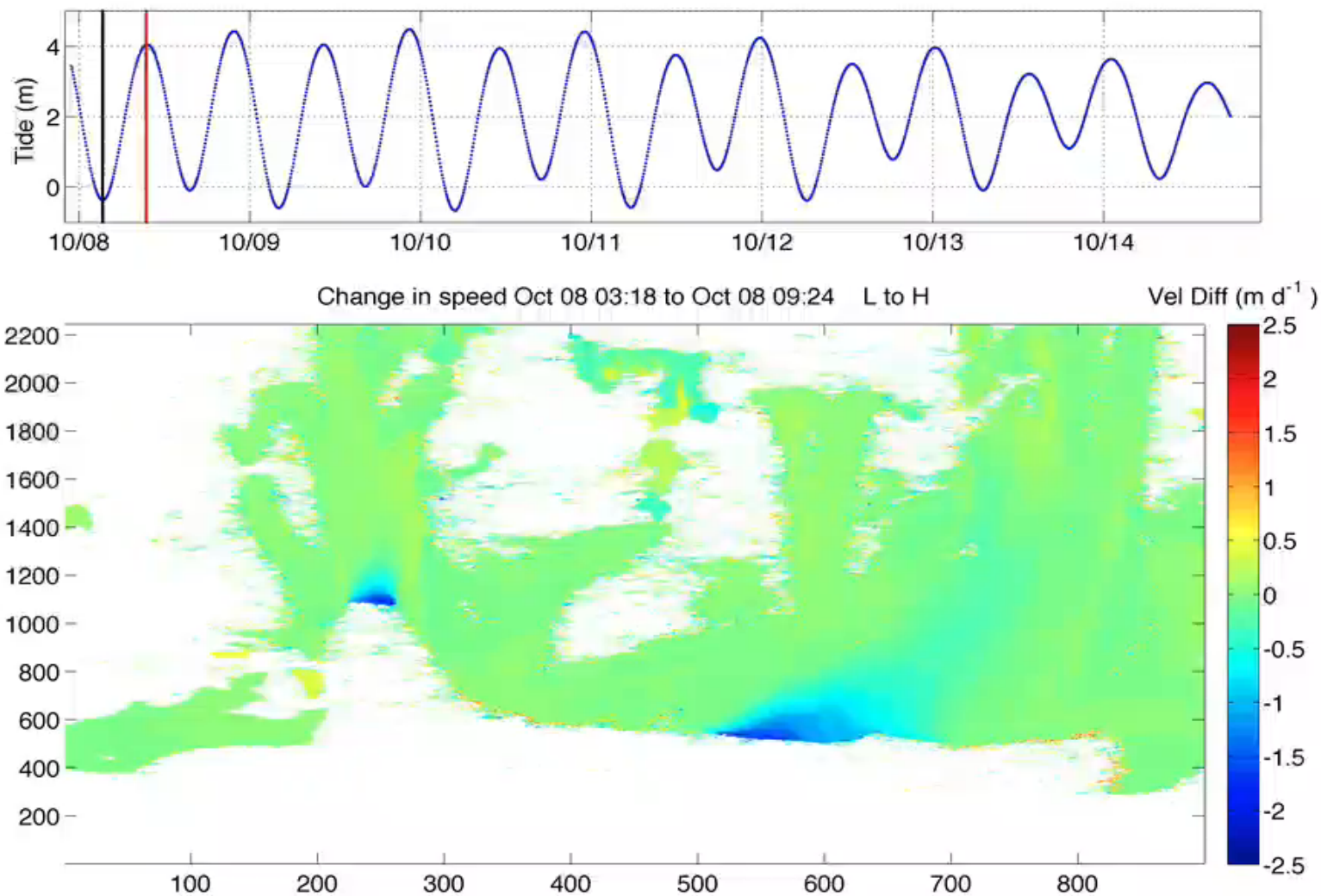


Seismic profile imagery of Columbia Bay bed



- 30+ meters of sedimentation, non-uniform in time.
- Over-deepenings evacuate as terminus approaches them in retreat.
- Misguides bed inversion.

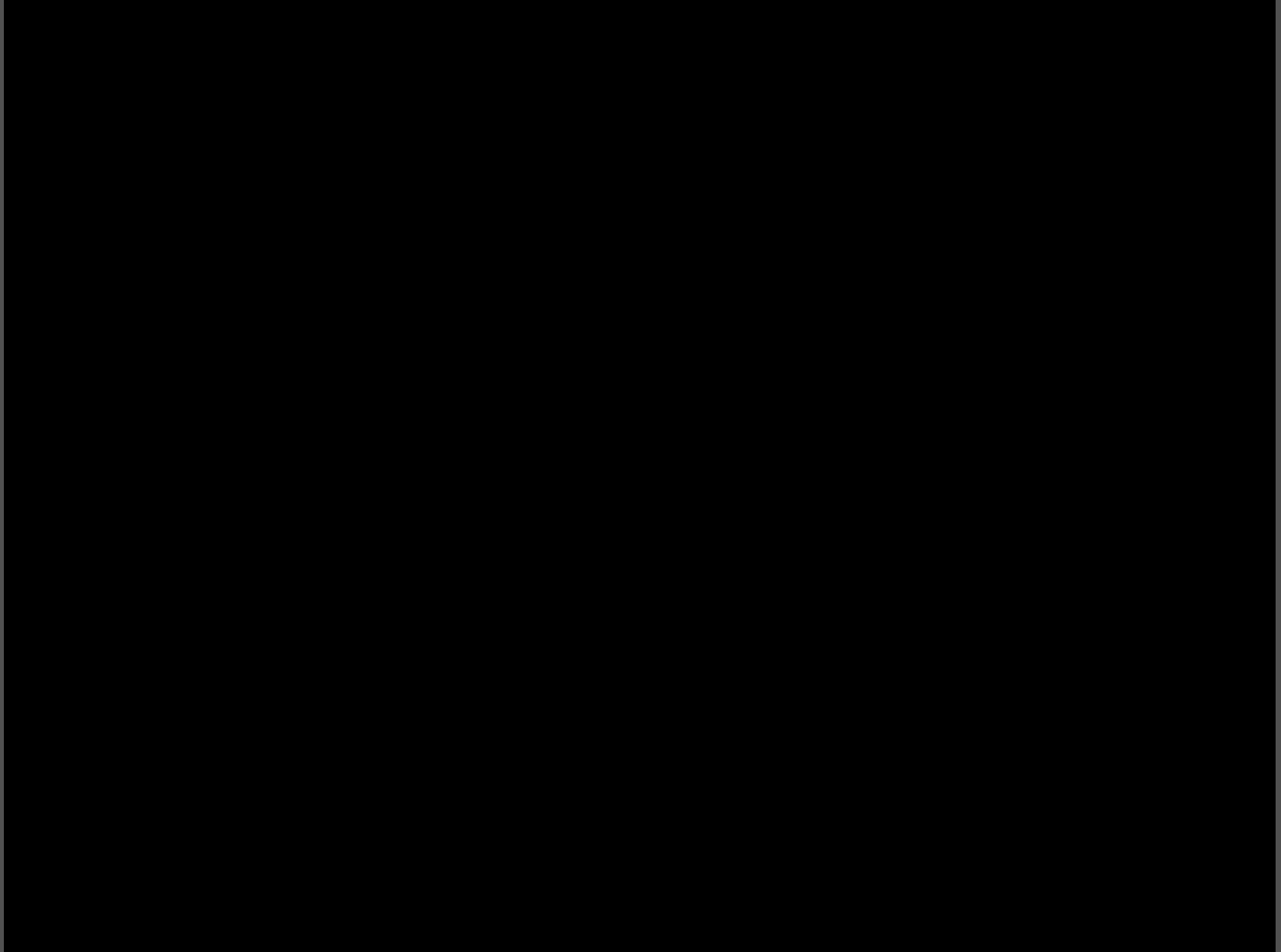
Map of ice speed in space and time



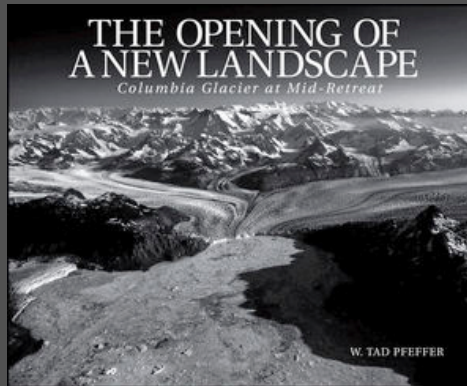
Sometimes a picture *is* worth 1000 words...

$$\frac{\partial q}{\partial x} + \frac{\partial h}{\partial t} = 0$$

Early timelapse photography – Variegated Glacier surge, 1982



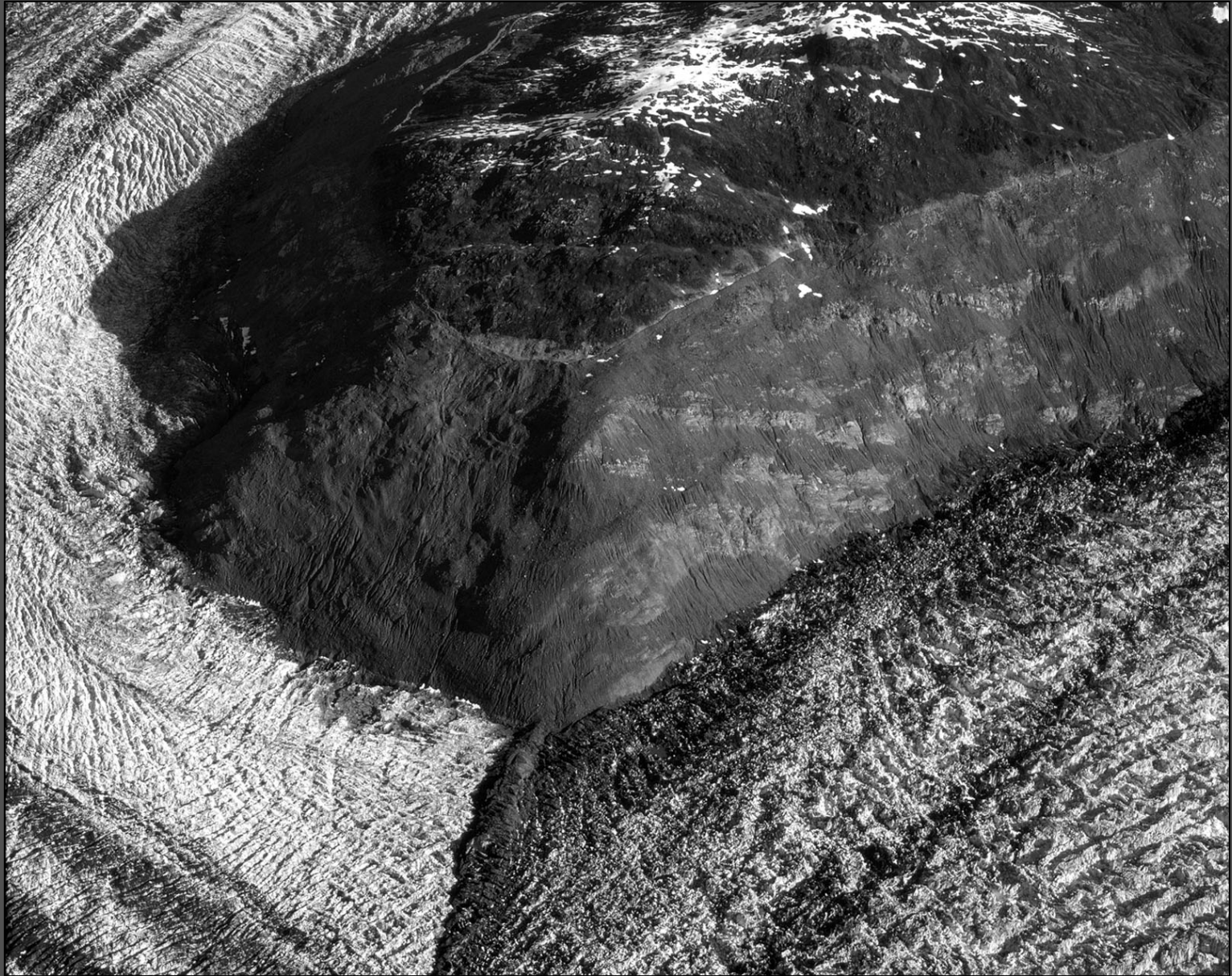
Pictures convey a comprehensive picture of a place
(a picture is worth 1000 words)



Columbia Glacier in pictures



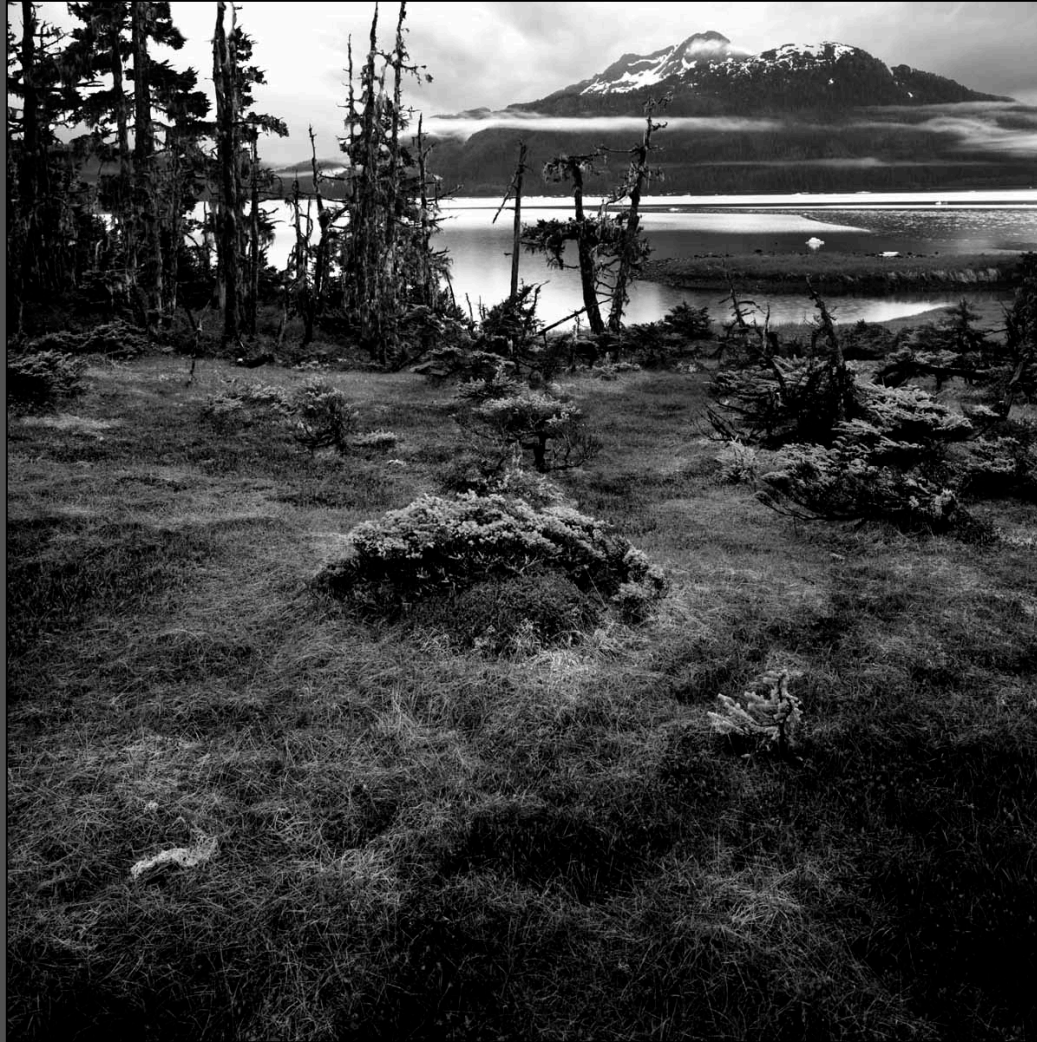
Columbia Glacier in pictures



Columbia Glacier in pictures



Columbia Glacier in pictures



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Knowledge and Belief

