

## ***Interactive comment on “Delaying future sea-level rise by storing water on Antarctica” by K. Frieler et al.***

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Some technical comments about your idea :

- How can you transport water in pipelines with a temperature of  $-80^{\circ}\text{C}$  in winter. ( $-89^{\circ}\text{C}$  has been measured in Vostok,  $-93^{\circ}\text{C}$  measured by satellite between Dome Argus and Dome Fuji). On one year, the average temperature is  $-57^{\circ}\text{C}$ . Moreover with powerful winds (catabatic winds with a speed of 200 km/h (possible until 300 km/h)). Even with a good insolation, it seems not possible. If water freeze in the pipeline, the pipeline explodes. If water freeze in the pipeline and the pipeline doesn't explode, how can you unfreeze kilometers of pipeline ?
- You talk about the transalaskan pipeline. During the building of this pipeline, more

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than 30 people died. Alaska is cold. But compared to Antarctica, it's nothing. In Antarctica, during winter, as far as I know, in the inland, there are only 3 bases with people living in (Amundsen-Scott, Vostok, Concordia) (some others have been used exceptionally). And those people only stay in the bases, they don't go for a walk outside. Bases are inhabited during winter only near the shores. How people can work in winter to build pipelines ? It seems almost impossible. The Amundsen-Scott base has been built during the summer (with a warm temperature of  $-30^{\circ}\text{C}$ ), using a lot of C-130 Hercules planes. The cost of the construction of this base was huge, but it's nothing compared to the building of a pipeline in Antarctica. Planes can't fly in Antarctica during winter, etc. Summer in Antarctica is very short.

- You are considering that putting salted water in Antarctica is not a problem. But the Madrid treaty is very strict on that point, it's not allowed. Moreover, when glaciers in the world will have melt (in a near future), the only place where pure water will available will be in Antarctica, and Greenland (maybe). And we can't destroy those ultimate pure water stock.

- Glaciers are moving, and sometimes are moving fast near the shores. How pipelines can be used on moving glaciers ?

- On the economic point of view. Even if water can be transported in the antarctic inland, what will be the price for each cubic meter of water transported (including : building the pipeline and using the pipeline) ? And who will pay this huge bill ?

On my point of view, that's a very theoretical idea. It seems impossible to have something really functioning, and moreover something that can solve the problem of sea level.

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Interactive comment on Earth Syst. Dynam. Discuss., 6, 1979, 2015.

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