

Hansen
Tim Hansen

CRISIS

1/3 of CO₂ will stay in atmosphere for 1,000 yrs

6/3/08 Global warming
v. global dimming

Do particles cool us [After 9/11 -
noticable warming when plane
stopped flying]

We will lose all the ice in the
Arctic based on present GHG.

Ice Sheets - Tipping Point is Near.

But we have time to act (barely)

Global Warming (so far) is smaller than
~~even~~ weather fluctuations.

Warming is higher in Arctic

(because more ocean in the S. Hemisphere)

Tipping Level

→ Pt where no add forcing is reqd.

Pt of No Return

Change is unstoppable. if ice sheet is
sliding toward ocean.

Greenland

6-3-08

He used the melt slide -

Running water doesn't go to ocean - goes to land & weathers back to land -

Western Antarctic is also losing ice -

Alpine Water Supplies - provide water to hundreds of millions of people - if we lose those glaciers, we will still have water in spring, but rivers will run dry in summer & fall.

CO₂ target should be less than 385 because it is causing acidification of the oceans.

1/3 of ocean biology is associated w/ coral reefs -

Aim for 350 ppm target -

CO₂ in atmosphere - half disappears in ~25 yrs - into the oceans - but then it slows down

We've probably used ~ 1/2 of existing oil in ground -

Jim Hanse
6-3-08

But we still have lots of coal -

① We have to cut off coal sources -
moratorium on new ones & phase out
existing ones - so CO₂ peaks at ~ 425 ppm -

But would stay above 400 ppm for
several centuries unless we restore
forestation & bio char - capture CO₂

② Raising Carbon Price -

→ Tax lifestyle choices that waste carbon

→ Tax should be returned to public - put it
into their bank accounts (everyone in the world)
monthly

→ Don't let Govt get that \$ -

Conflict between

Fossil Fuel Special Interests

vs

Young People & Nature

6-3-08
Jim Hansen

We have to figure out how to live
w/o fossil fuel - why not now -

Metrics for Dangerous Change

- * Extirpation of species
 - Extinction of polar & alpine species
 - Unsustainable migration rates

* Ice Sheet Disintegration

* Regional Climate Disruptions

→ Areas Under Water: Four Regions

Trin Hans
6-3-08

1 meter sea level rise is practically
guaranteed

"Cap & Trade"

Cap = tax

Hard to trade coal -

Carbon emission would plummet if we
tax it -

Methane

A problem, but much less than carbon.

Germany is replacing nuclear w/ coal fired plants -
you can't do that.

Japan used to get 19% of energy from coal -
now 38%.

China builds 2 coal fired energy plants
every 7-8 days.

550 ppm or even 450 ppm for a long period would be recipe for global disaster -

China will ~~not~~ want to solve this problem - 100s of millions live close to sea level - if they use coal, they must use carbon capture & sequestration -

China has contracted w/ a British co. to build 5 carbon free cities -

China has severe air pollution -

80% of volcanos are in deep ocean -
they erupt violently & spew out
CO₂ into the ocean -

Paleo climate

50 M yrs ago no ice - India moved into Asia

34 M yrs ago - ice started forming in

Antarctica - India crashed into Asia &
carbon settled in aging Himalayas -