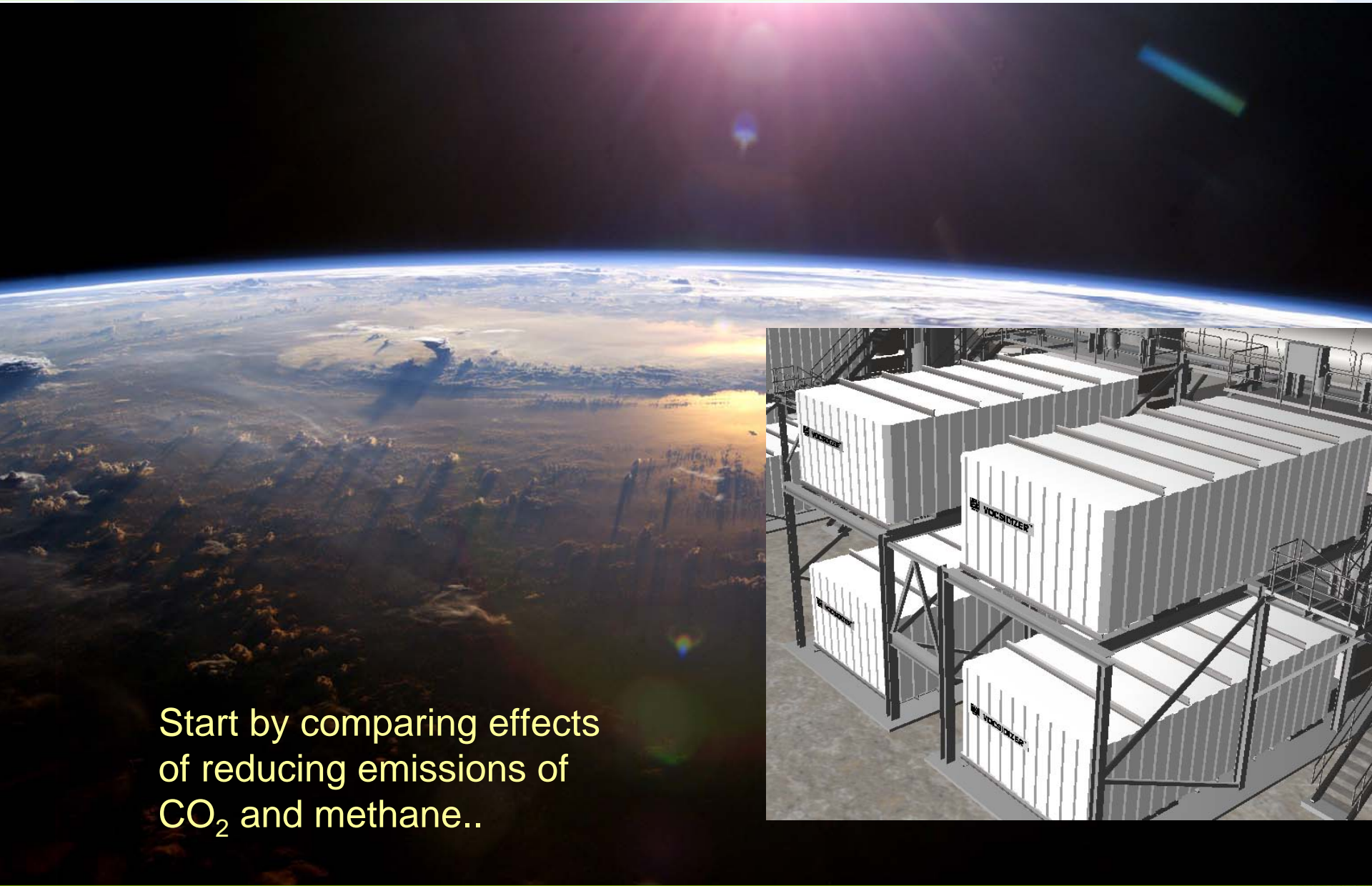


Processing Coal Mine VAM (Ventilation Air Methane)
- an opportunity to contradict Global Warming!

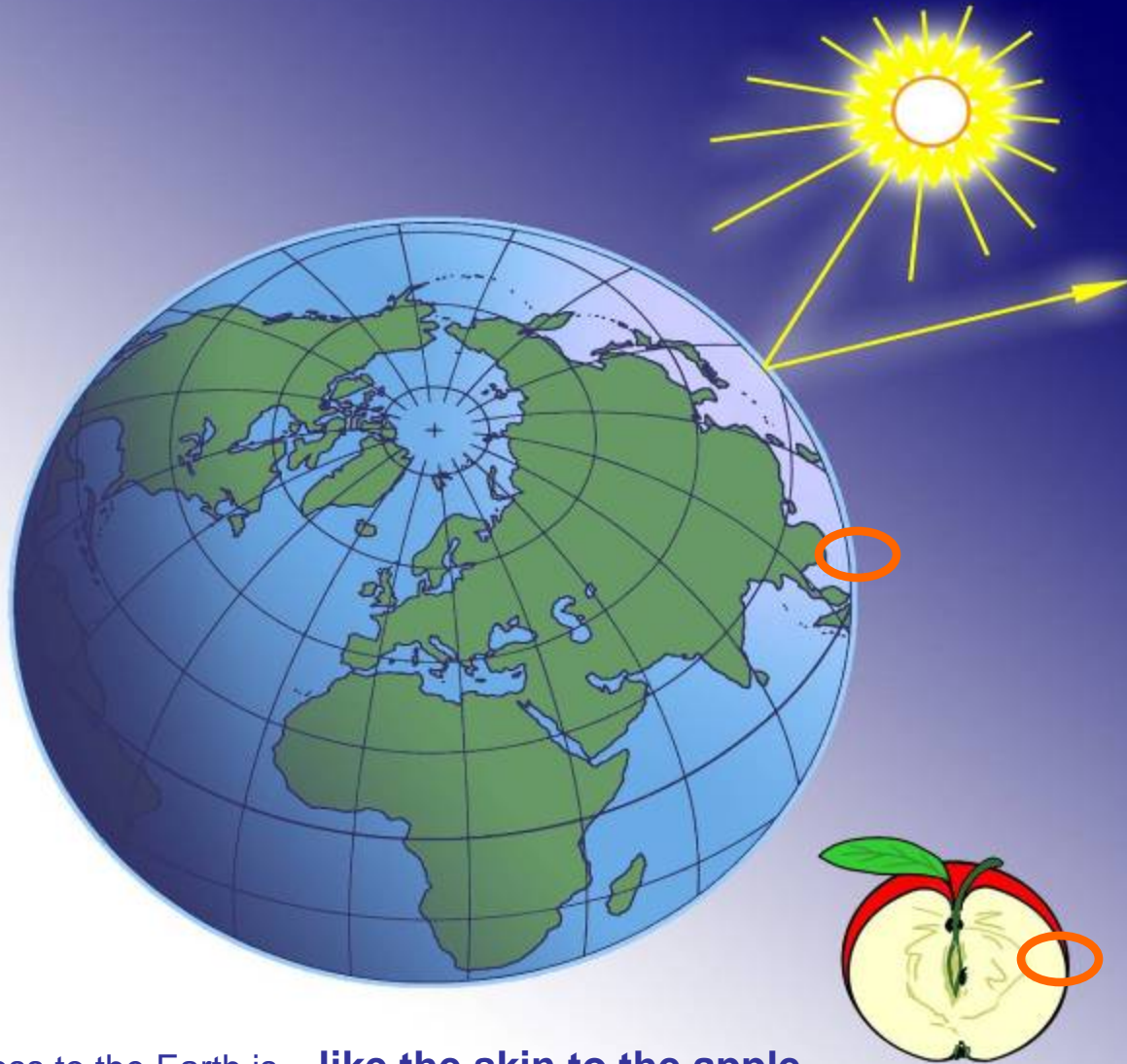
Richard Mattus, Man Dir
MEGTEC Systems AB
GMI Project Network

Coal Mine VAM Processing



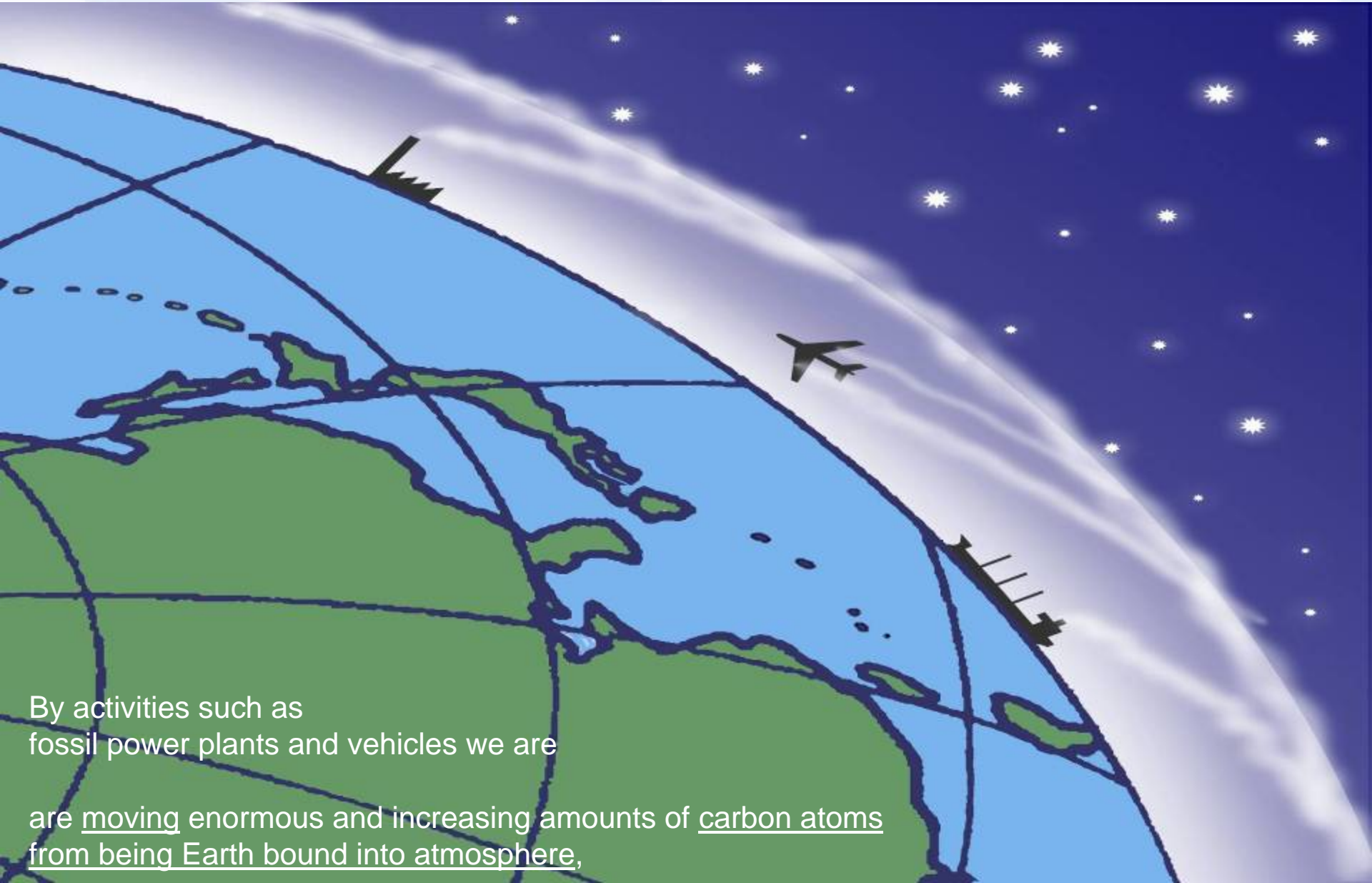
Start by comparing effects of reducing emissions of CO₂ and methane..

One thin bubble of atmosphere



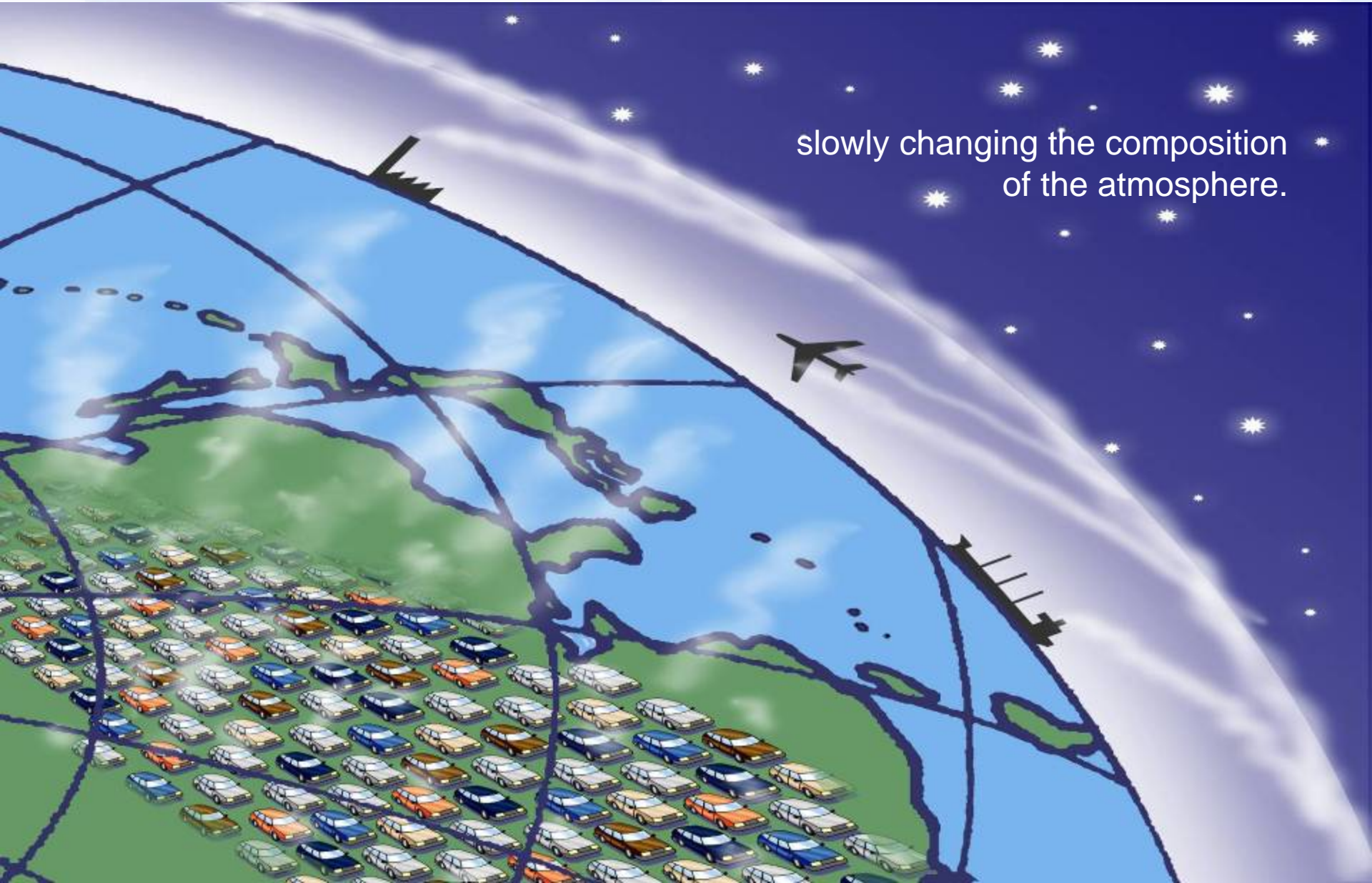
- where the thickness to the Earth is **like the skin to the apple**

One thin bubble of atmosphere



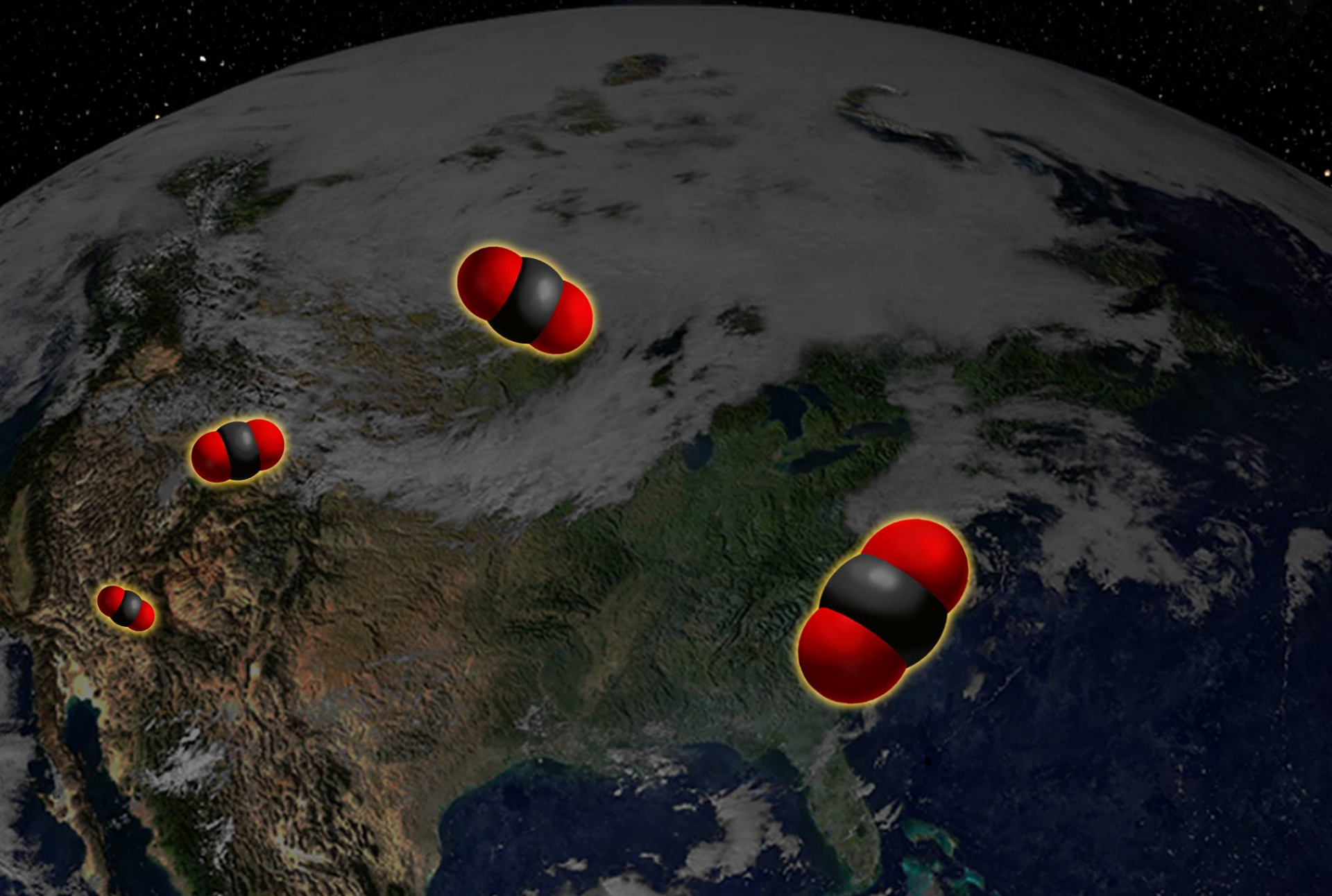
By activities such as fossil power plants and vehicles we are are moving enormous and increasing amounts of carbon atoms from being Earth bound into atmosphere,

One thin bubble of atmosphere



slowly changing the composition
of the atmosphere.

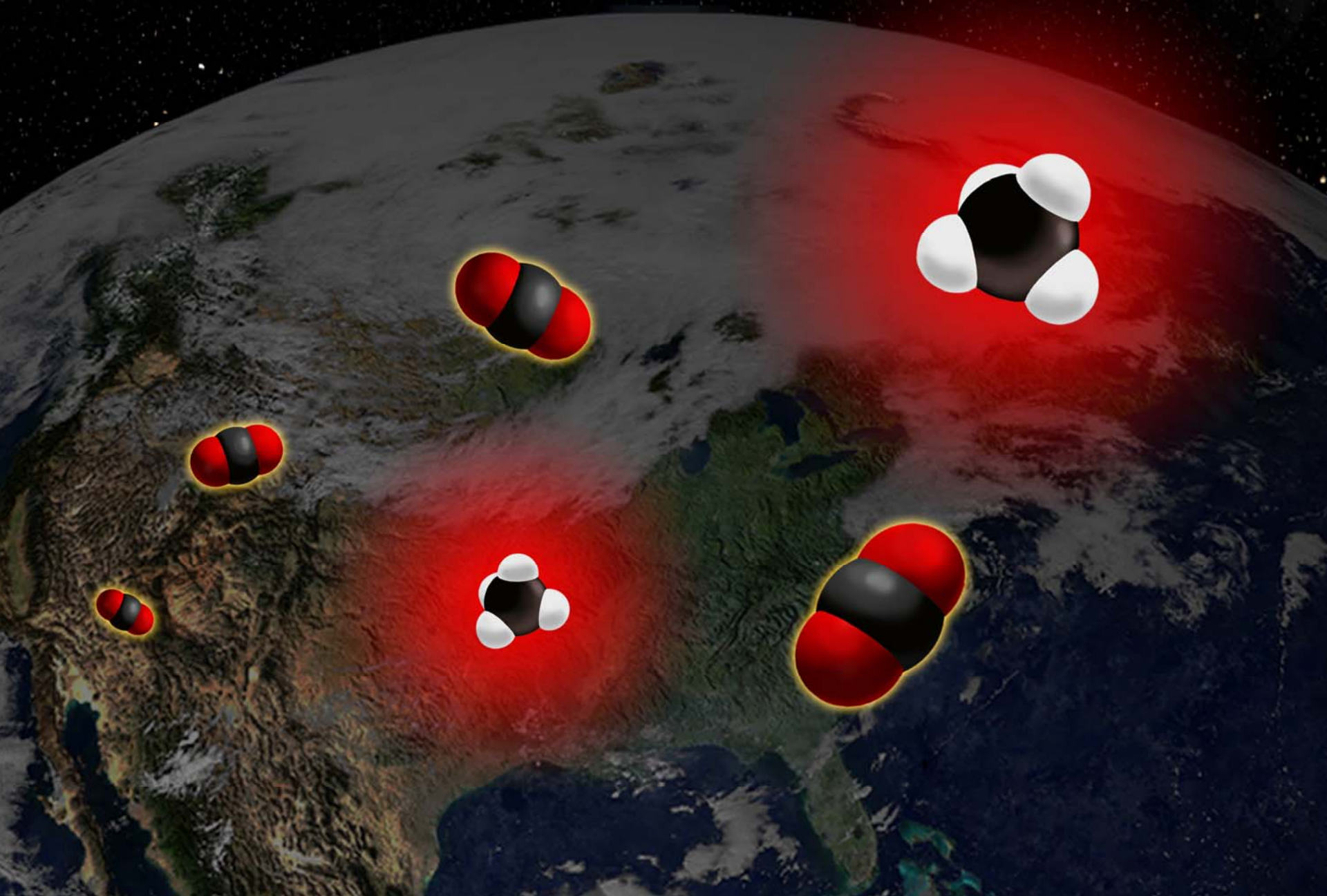
The added CO₂ can retain some more heat in atmosphere, causing Global Warming.



Methane can retain MUCH more heat!



Methane has a significantly more powerful effect on global warming



CONSIDER Green House Gas METHANE

CO₂



GW impact



	Life time in atmosphere
CO ₂	>>10 000 years
CH ₄	12 years

CH₄



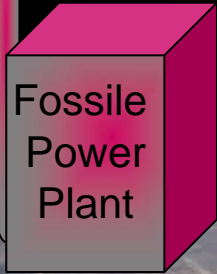
GW impact



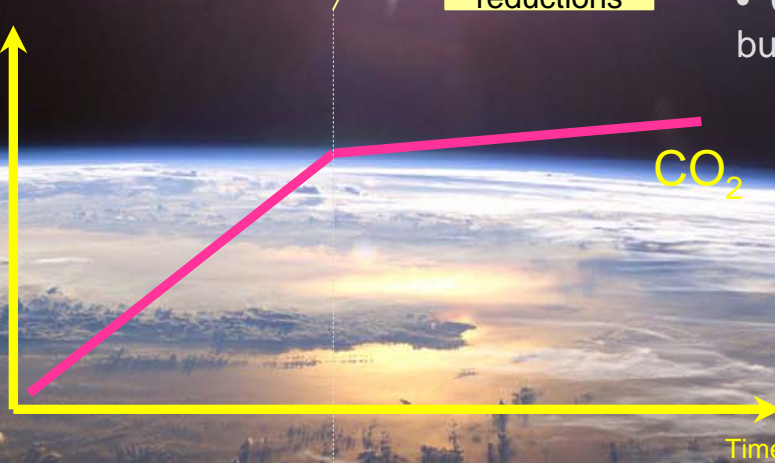
12 years

CONSIDER Green House Gas METHANE

CO₂



GW impact



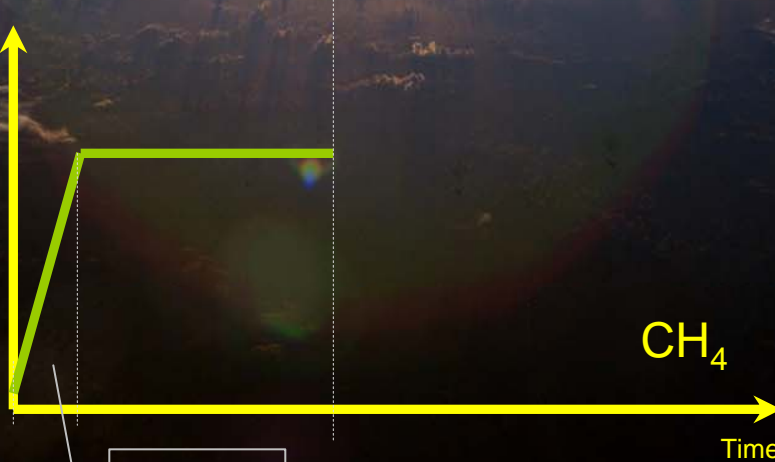
CONCLUSIONS ON MAJOR EMISSION REDUCTIONS:

- CO₂ continues to accumulate, but at a slower rate.

CH₄

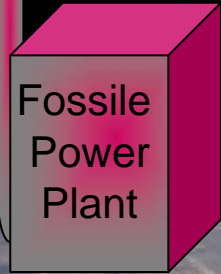


GW impact

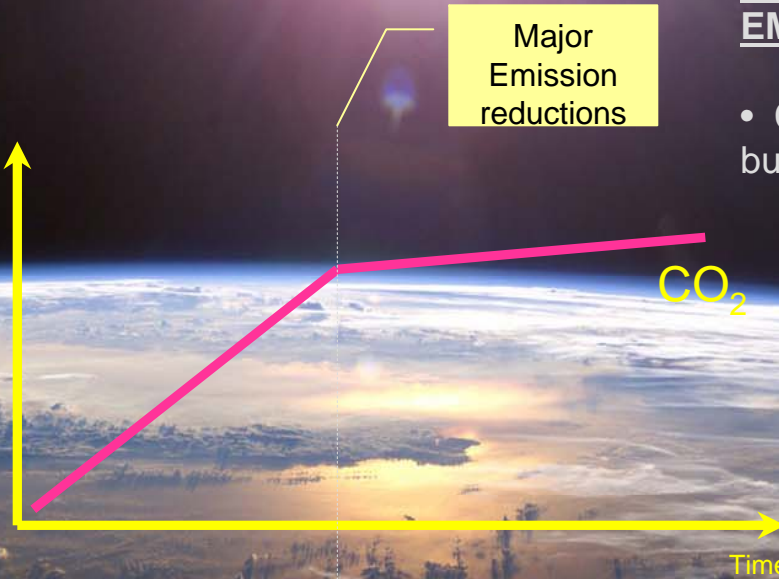


CONSIDER Green House Gas METHANE

CO₂



GW impact



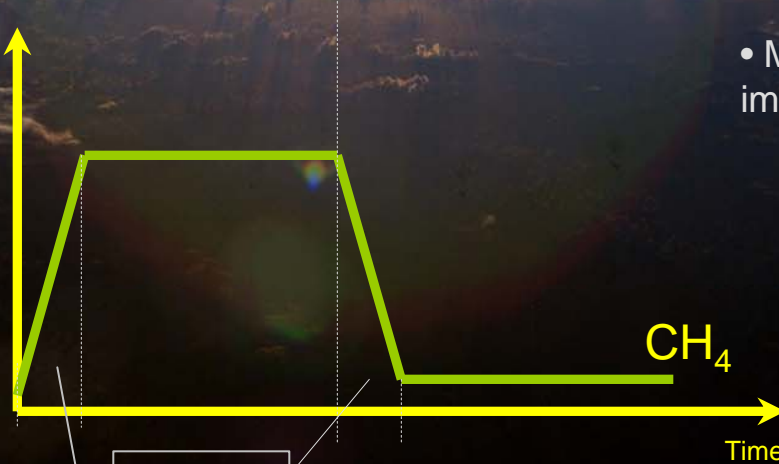
CONCLUSIONS ON MAJOR EMISSION REDUCTIONS:

- CO₂ continues to accumulate, but at a slower rate.

CH₄



GW impact



- Methane reductions have full impact quickly - in only 12 years!

CONSIDER Green House Gas METHANE

CO₂

Fossil
Power
Plant

GW
impact

Major
Emission
reductions

CO₂

Time

CONCLUSIONS ON MAJOR EMISSION REDUCTIONS:

- CO₂ continues to accumulate, but at a slower rate.

CH₄

Coal mine
Vent
Shaft

GW
impact

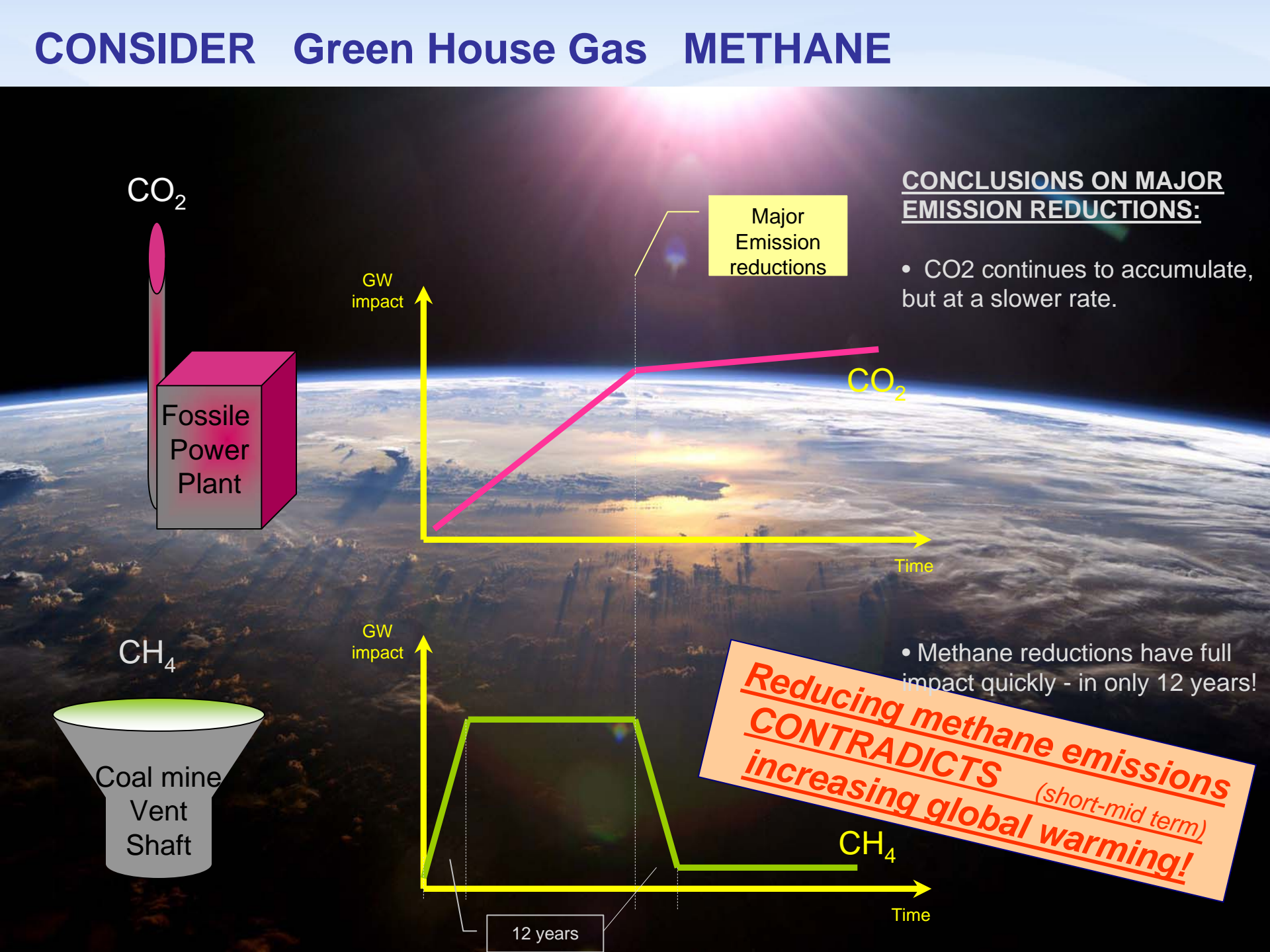
CH₄

Time

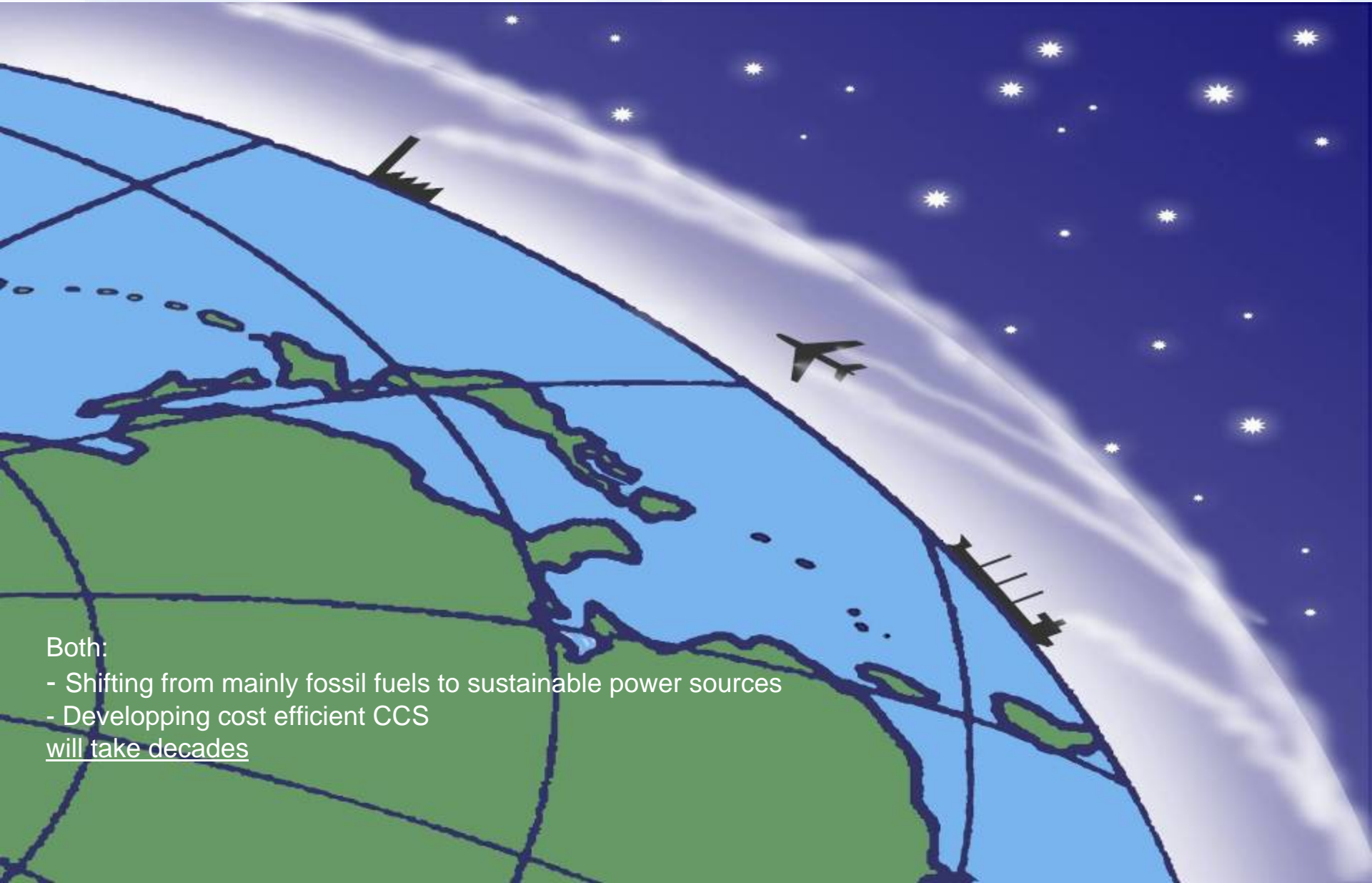
- Methane reductions have full impact quickly - in only 12 years!

Reducing methane emissions
CONTRADICTS (short-mid term)
increasing global warming!

12 years



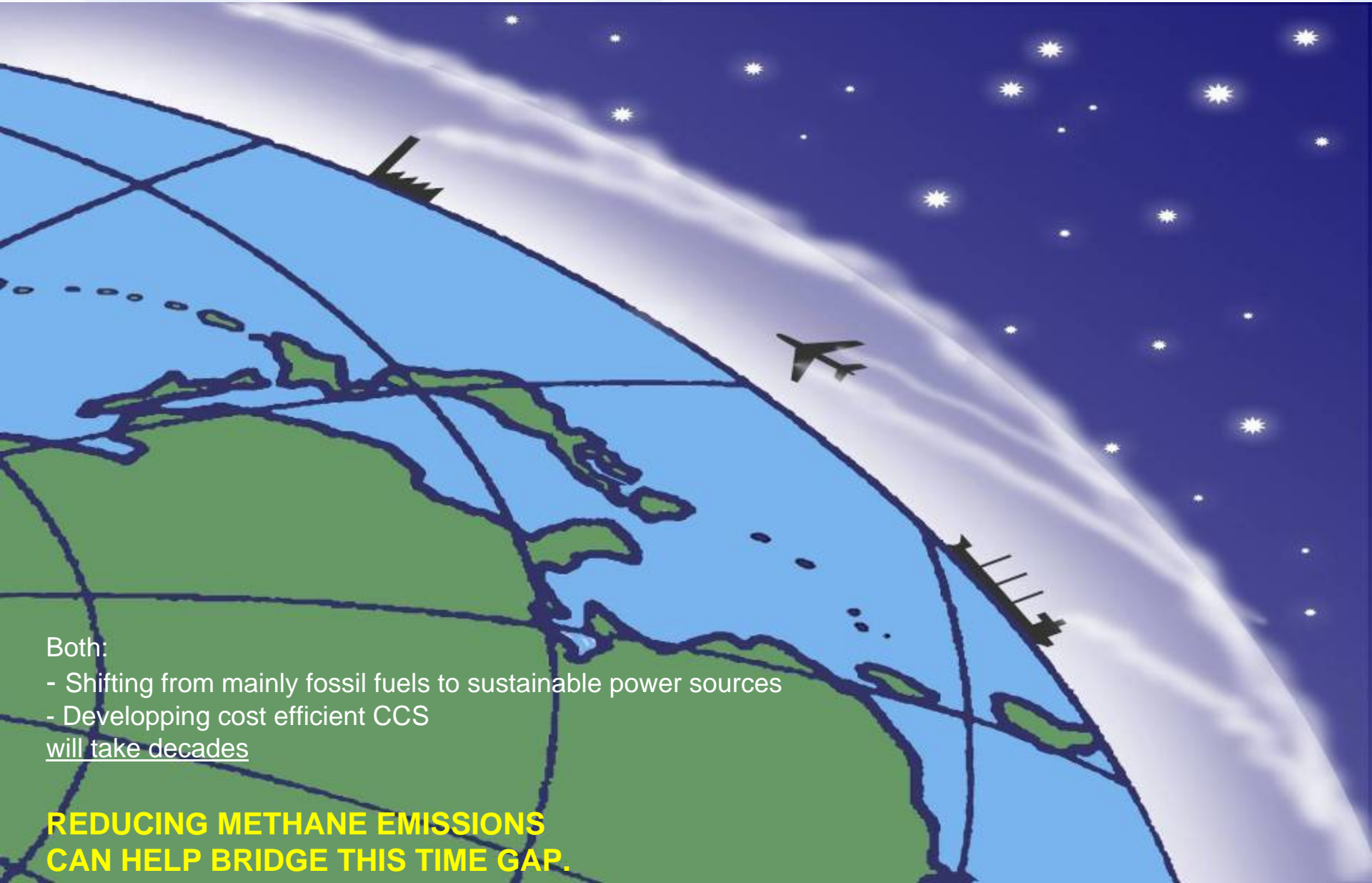
One thin bubble of atmosphere



Both:

- Shifting from mainly fossil fuels to sustainable power sources
 - Developing cost efficient CCS
- will take decades

One thin bubble of atmosphere



Both:

- Shifting from mainly fossil fuels to sustainable power sources
 - Developing cost efficient CCS
- will take decades

**REDUCING METHANE EMISSIONS
CAN HELP BRIDGE THIS TIME GAP.**

Coal Mine VAM = singular large source of methane emission



Coal mine VAM
1,000,000 m³/h, 0.8%
= 50,000 tons
methane/year

Coal Mine VAM = singular large source of methane emission



1 million t CO_{2e}



Coal mine VAM
1,000,000 m³/h, 0.8%
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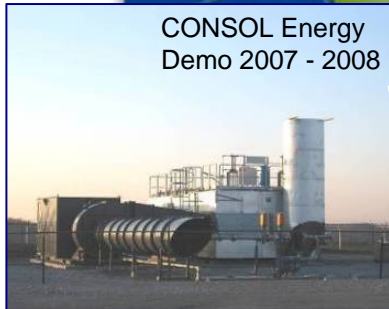
MEGTEC – global leader in Industrial Emission Control and Energy Recovery & Utilization



Officially announced VAM installations Worldwide

- MEGTEC and others 2010

- Demos (MEGTEC)



Officially announced VAM installations Worldwide

- MEGTEC and others 2010

- Demos (MEGTEC)
- **Commercial**



Early 2010
UNFCCC
granted the
globally 1st
CER's for a
VAM based
project.



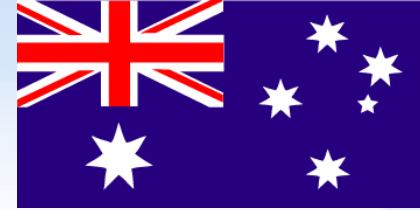
In full operation by April 2007 – the world's first VAM Power Plant

Fuel of 0.9% methane generates high grade steam for electricity.



MEGTEC VAM Power Plant WestVAMP

at BHP Billiton in Australia



By mid 2010 WestVAMP had generated:

- over 100,000 MWh of electricity
- over 625,000 carbon credits.



Officially announced VAM installations Worldwide

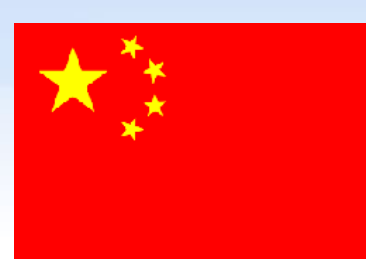
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MAJOR VAM PROJECT IN CHINA

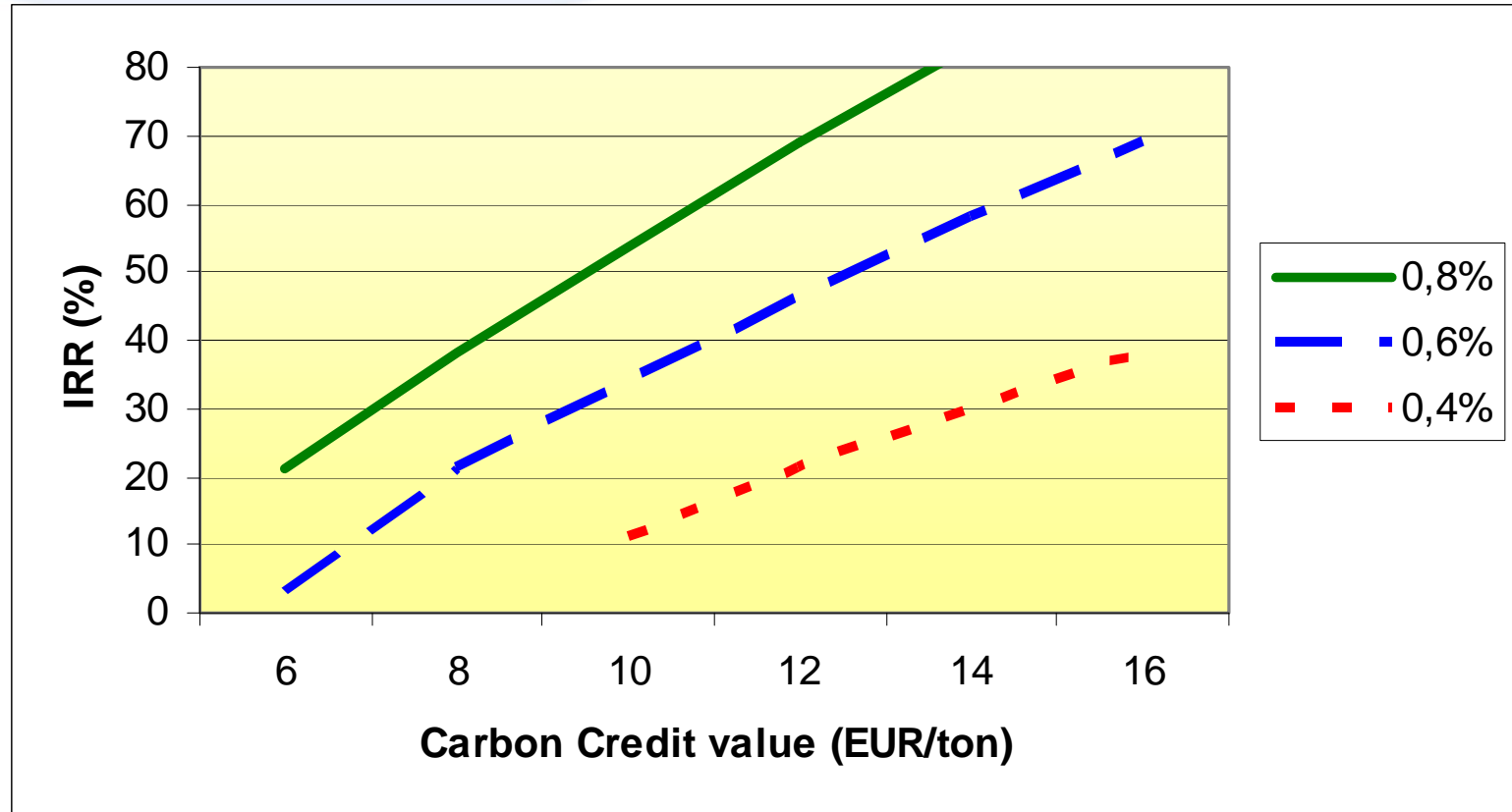
MEGTEC SUPPLIES TO J/V LEAD BY INT'L POWER COMPANY AES



- ❖ DaTong coal mine of SongZao Mining Group, ChongQing Province
- ❖ Processing capacity is 375,000 Nm³/h of ventilation air
- ❖ Will generate hot water for local use
- ❖ The 6 VOCSIDIZER (processing) units
- ❖ Installation in December 2010
- ❖ Start up in 1 Q 2011

VAM project economics indication

- Perfect case of Additionality!



2010 VAM PROJECT FEASIBILITY PROBLEM

Uncertainty about post 2012 Carbon Credits

⇒ Investors (globally) sit back and wait!

Provided certainty in post 2012 carbon credits major VAM installations will be realized primarily in:



GMI = Global Methane Initiative

(former Methane to Markets Partnership)



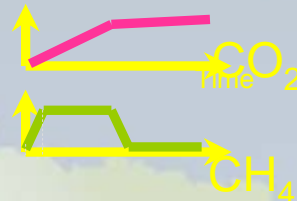
GMI is efficiently encouraging and promoting increased methane emission reductions by;

- addressing barriers preventing methane emission reductions
- conveying info on market conditions and on technologies
- coordinating voluntary activities involving governments and industry

MEGTEC spending major R&D and commercial efforts in order to establish a global VAM processing market, we find cooperating with GMI to be a true win-win partnership.

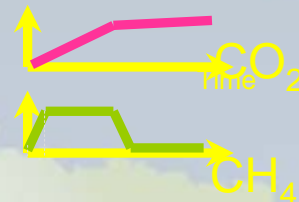
CONCLUSIONS

1. For overall Climate Control success, reducing CO₂ emissions must be combined with reducing Methane.



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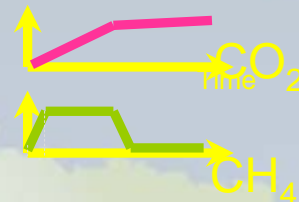


2. **VAM processing is a major opportunity for quick, positive impact on Global Warming.**



CONCLUSIONS

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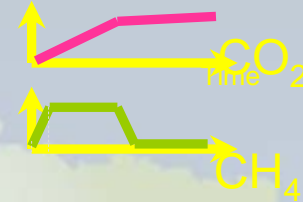


3. **GMI (M2M) has been very successful in triggering and encouraging reductions of global methane emissions.**



CONCLUSIONS

1. For overall Climate Control success, reducing CO₂ emissions must be combined with reducing Methane.



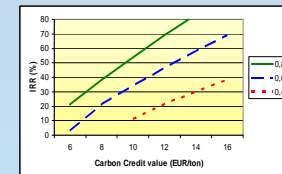
2. VAM processing is a major opportunity for quick, positive impact on Global Warming.



3. GMI (M2M) has been very successful in triggering and encouraging reductions of global methane emissions.



4. **Lack of certainty of post 2012 carbon credits stops emission reduction investments from being made.**





Thank you!

RMATTUS@MEGTEC.SE

