

Cédric Ringenbach

# Les pionniers de la science du climat

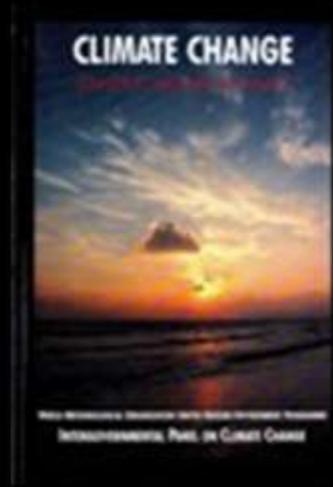


## James Hansen, 1988



Devant le Sénat américain

1990



Premier rapport du GIEC

1992

Sommet de la Terre  
à Rio et création  
de la CCNUCC

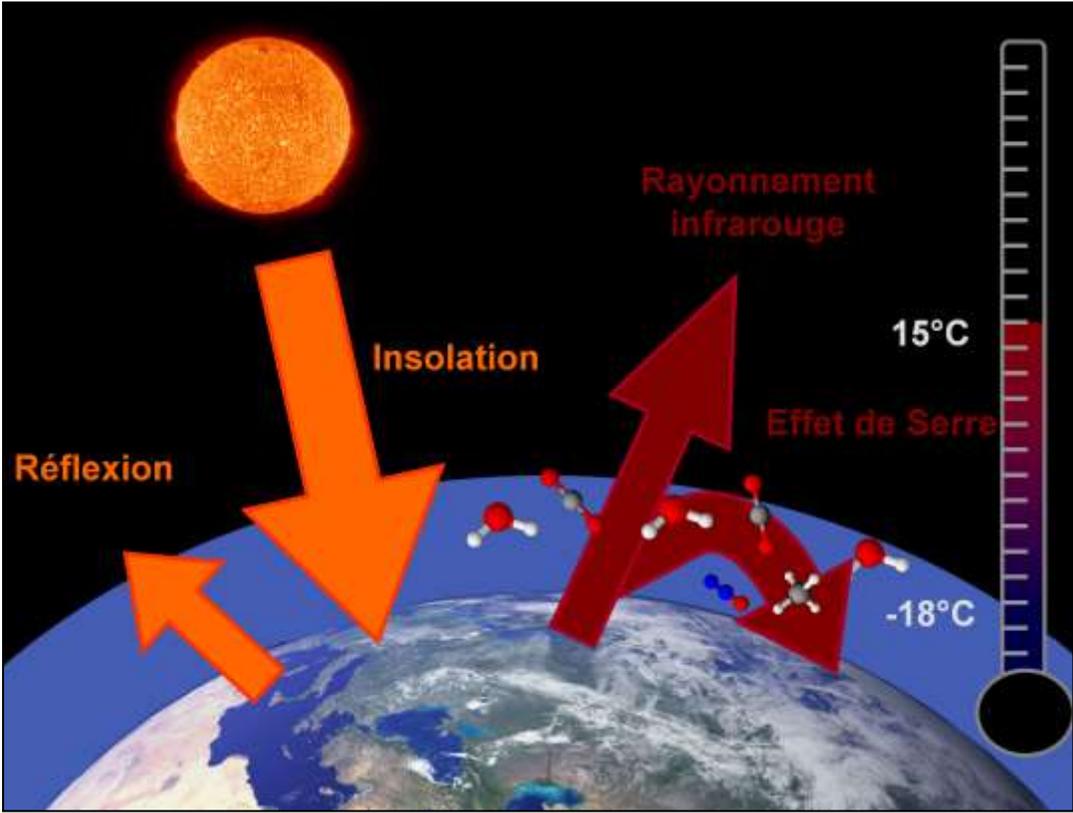
2015

Accord de Paris

## James Hansen, 1988



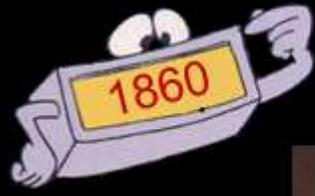
**XIXe siècle**



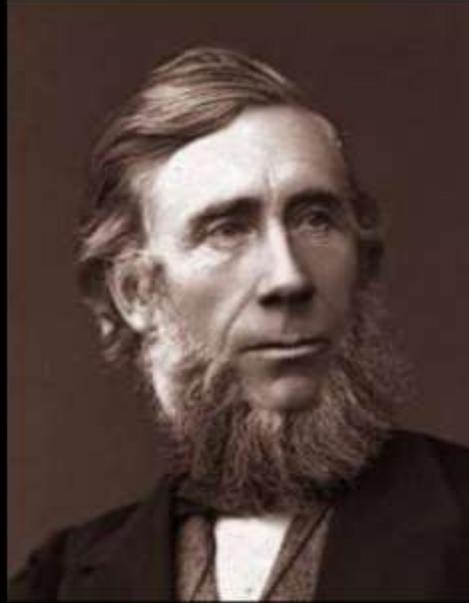


# Joseph Fourier

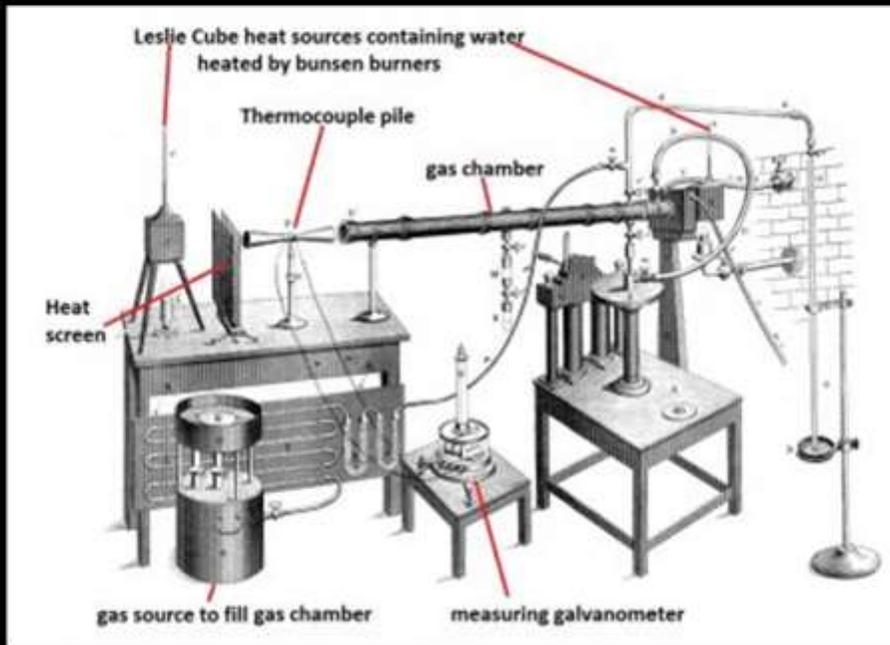


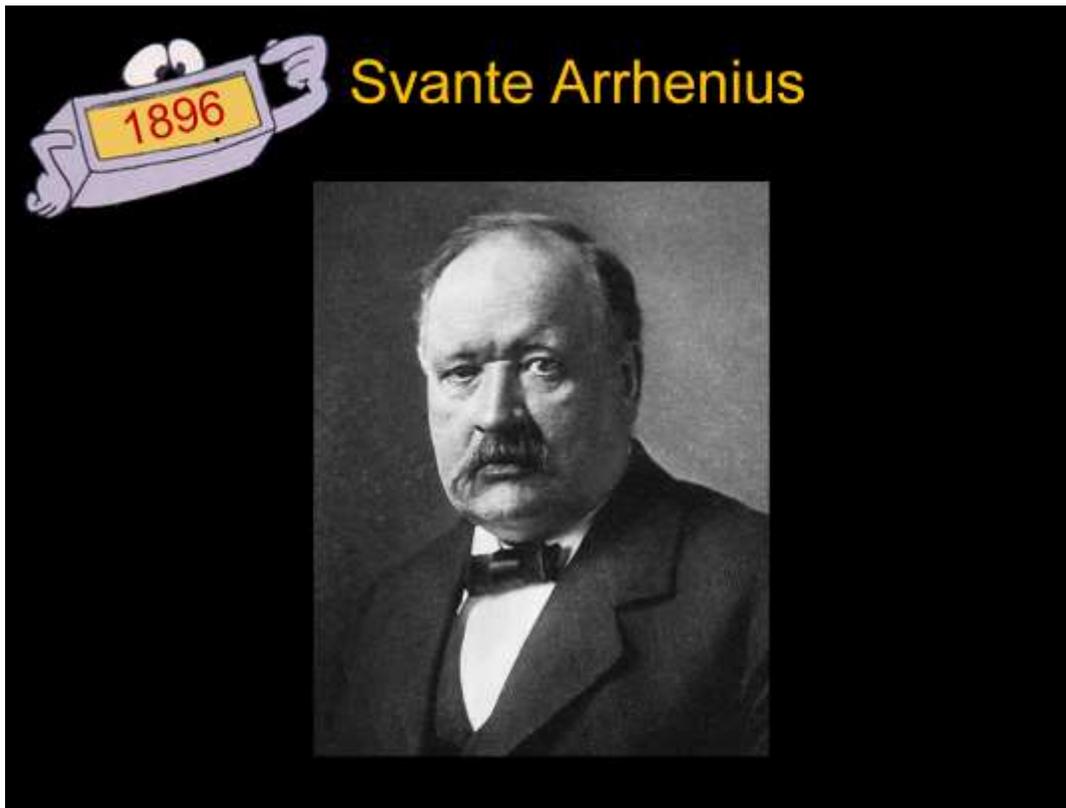


John Tyndall



# John Tyndall's experimentation





dissociation électrolytique



Charles Keeling



# Charles Keeling



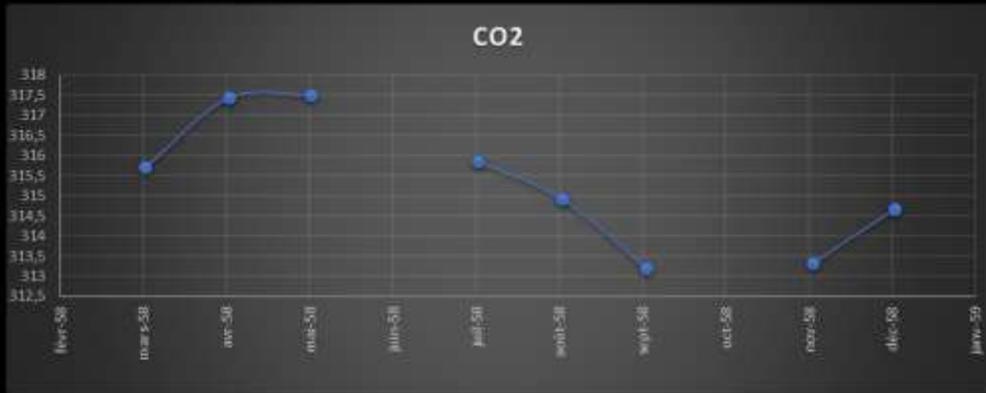




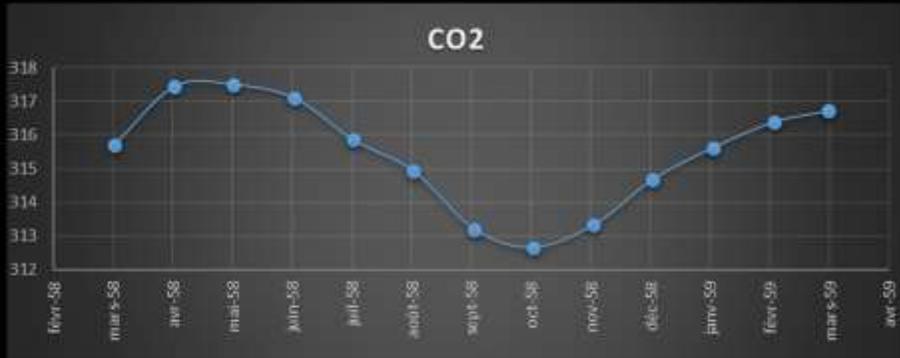
## Charles Keeling



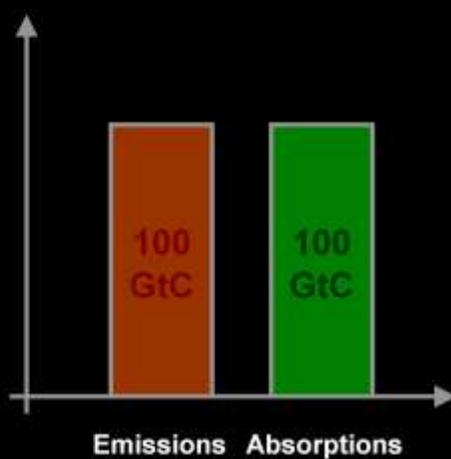
# Mauna Loa Curve



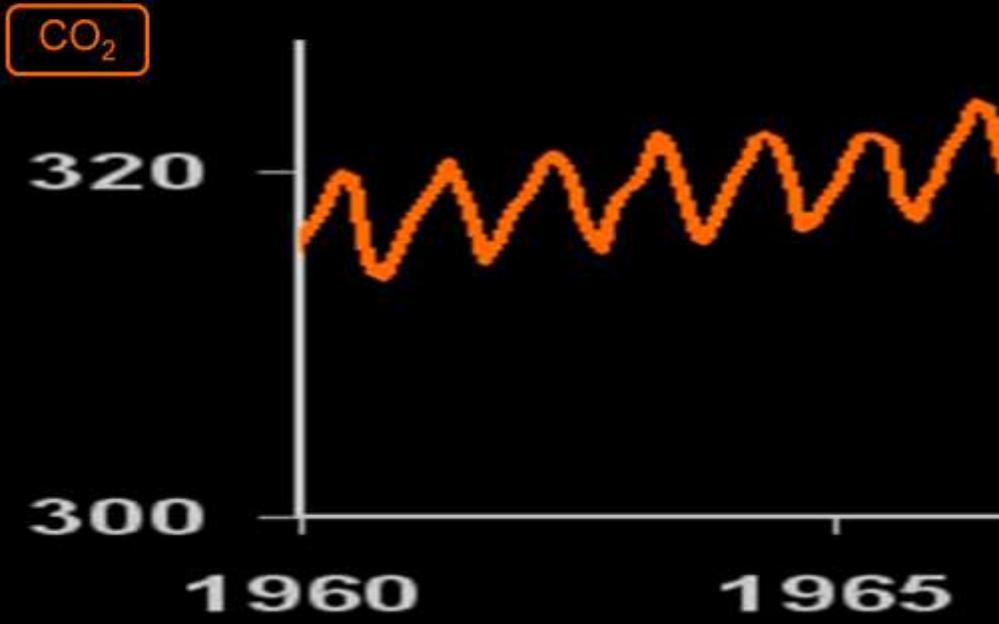
# Mauna Loa Curve



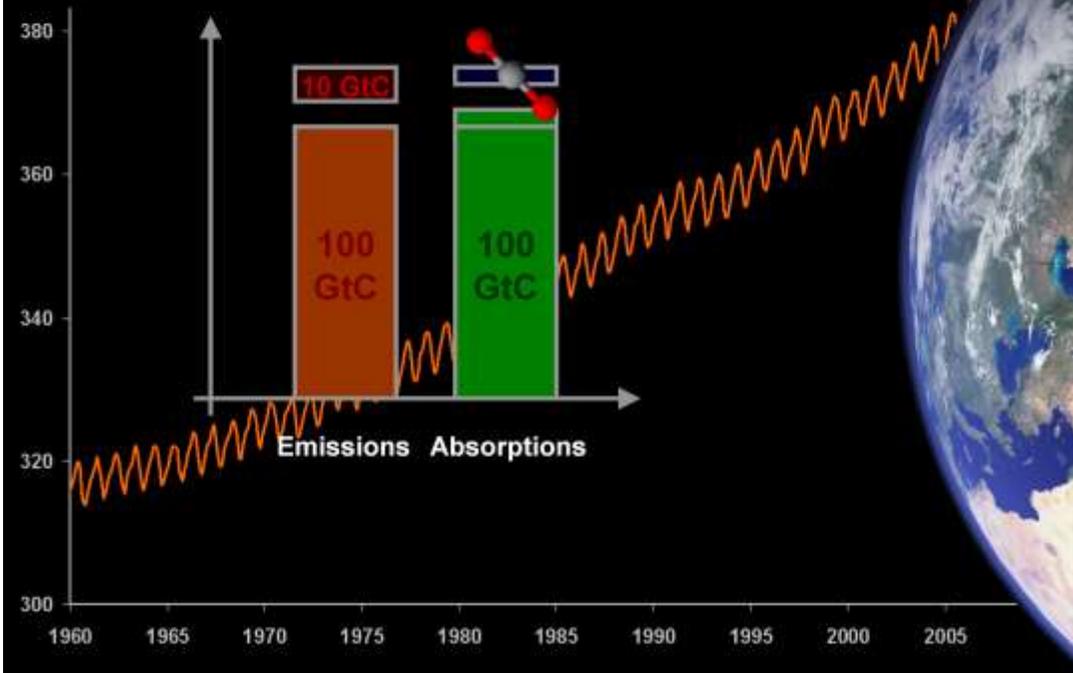
## Emissions naturelles et anthropiques



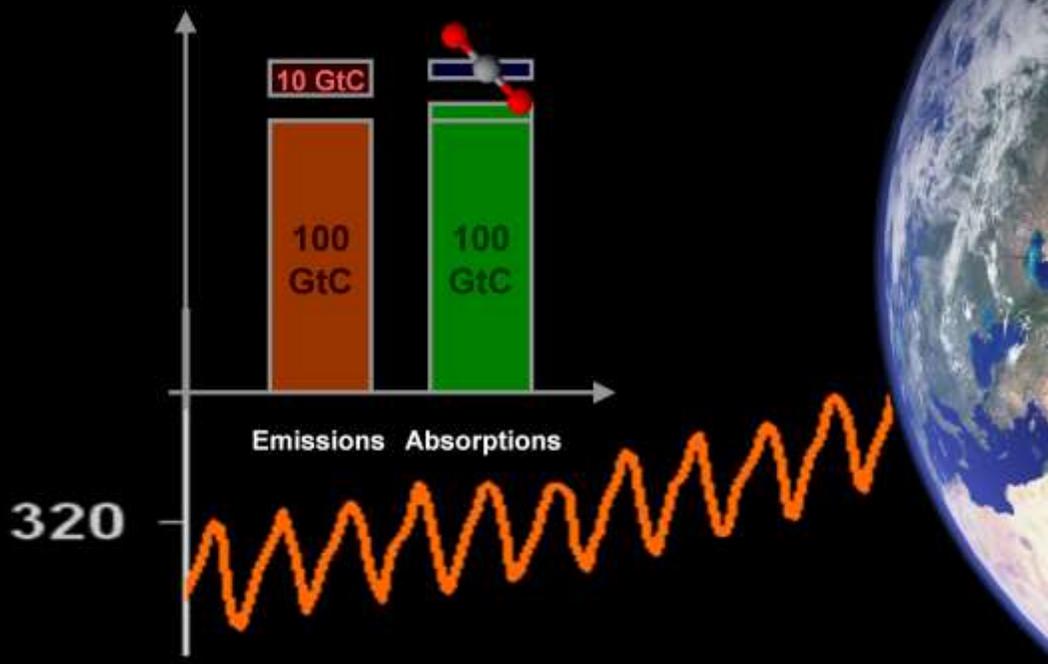
## Mesures du CO<sub>2</sub> à Mauna Loa



# Emissions naturelles et anthropiques

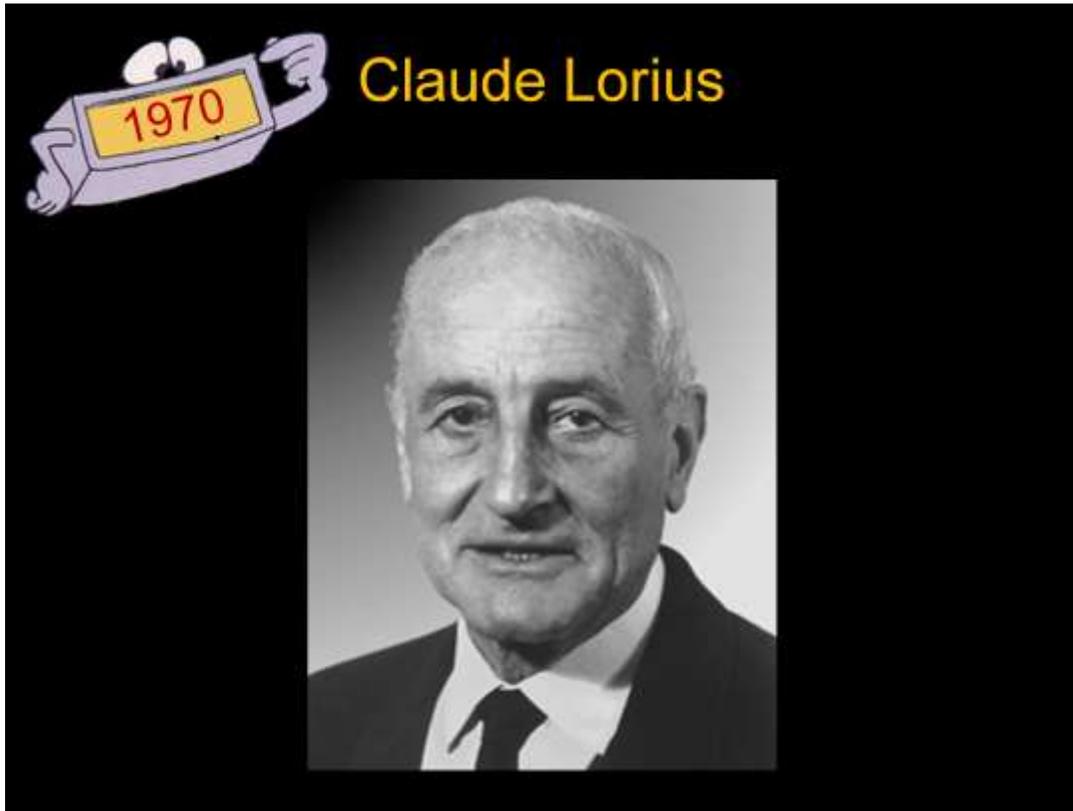


# Emissions naturelles et anthropiques



# Charles Keeling





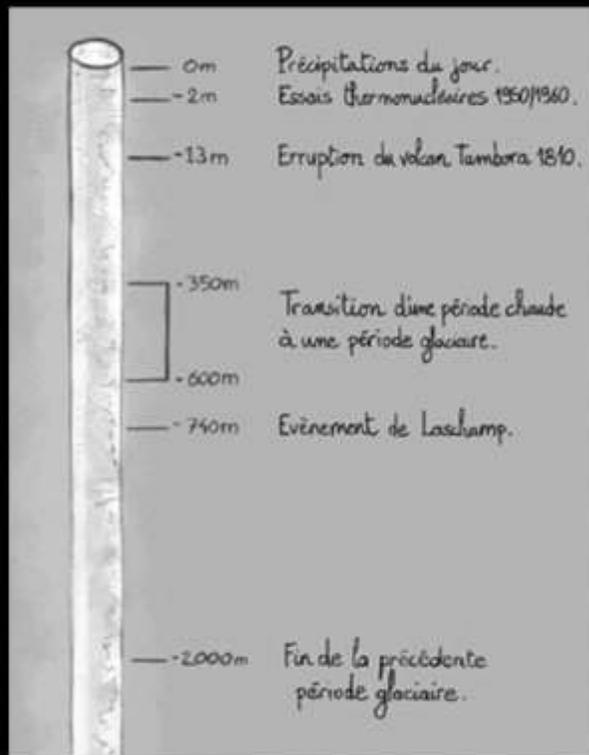
57 : Charcot

58 : service militaire retour Paris, deuterium, thermometre isotopique

Re-espédition. C'est lui le chef. On fait des trous.

## Archives glaciaires







655m, cristaux : période glaciaire.

+ 15 jours : 892m de profondeur. Stop: le matériel pas adapté. Fin de la mission. Pour le moment....

40.000 ans

# Archives glaciaires

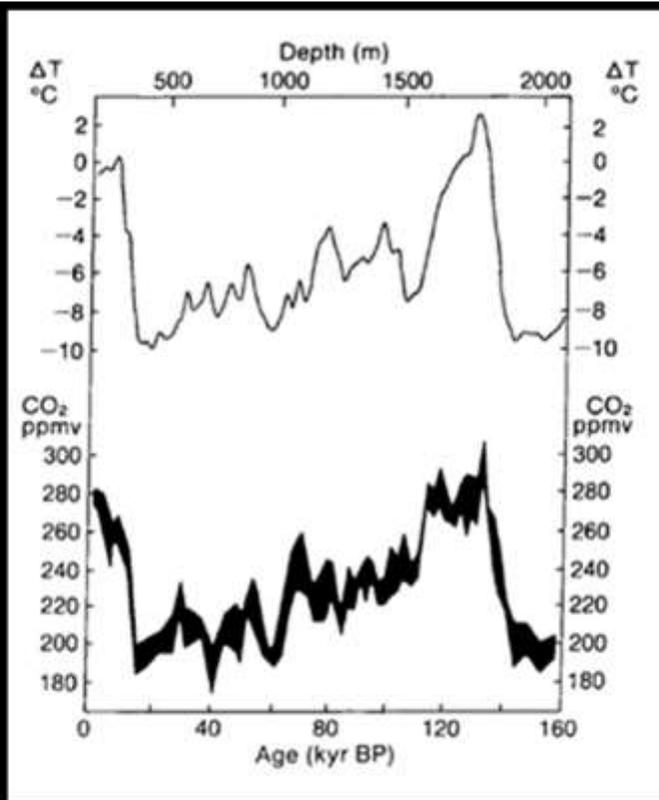


# Intuition



# Base de Vostok







Chaire de mathématiques appliquées à l'université de Belgrade (Serbie).

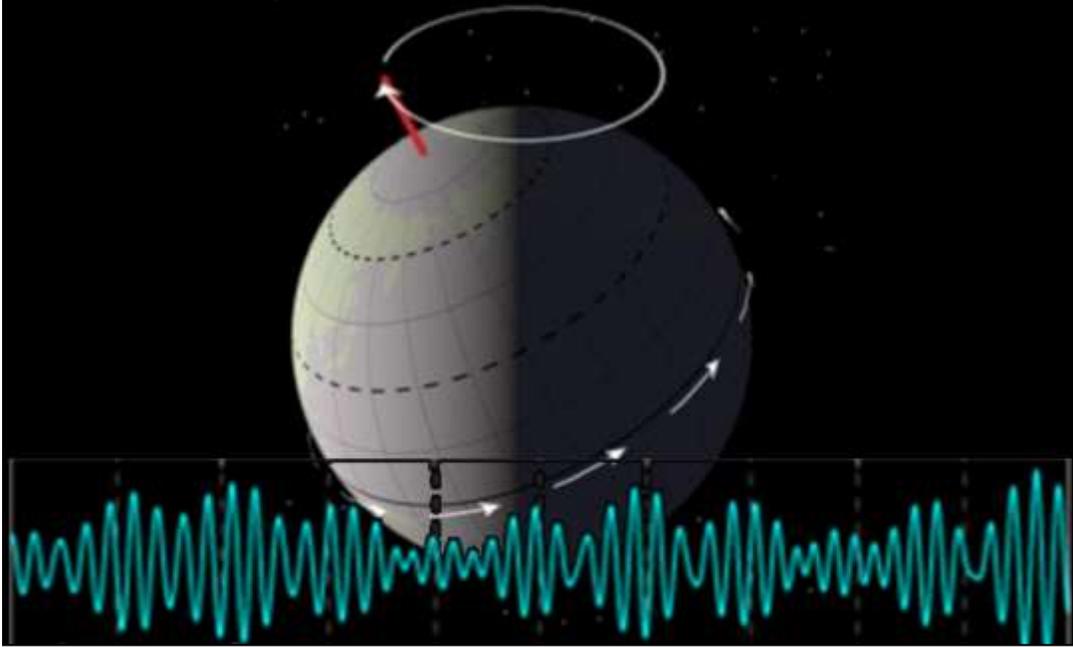
Logique, de mécanique céleste, et de physique théorique.

Voyage de noce en Autriche-Hongrie

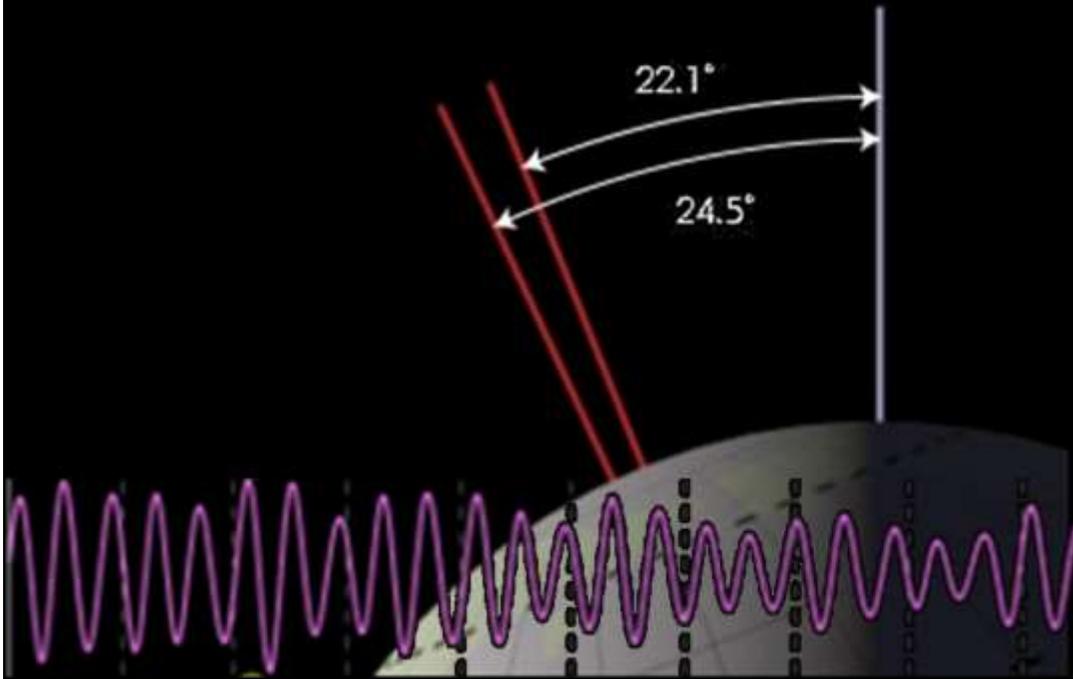
directeur de la bibliothèque de l'Académie des Sciences de Budapest, un mathématicien

l'Institut Central de... devinez quoi ! l'Institut Central Météorologie.

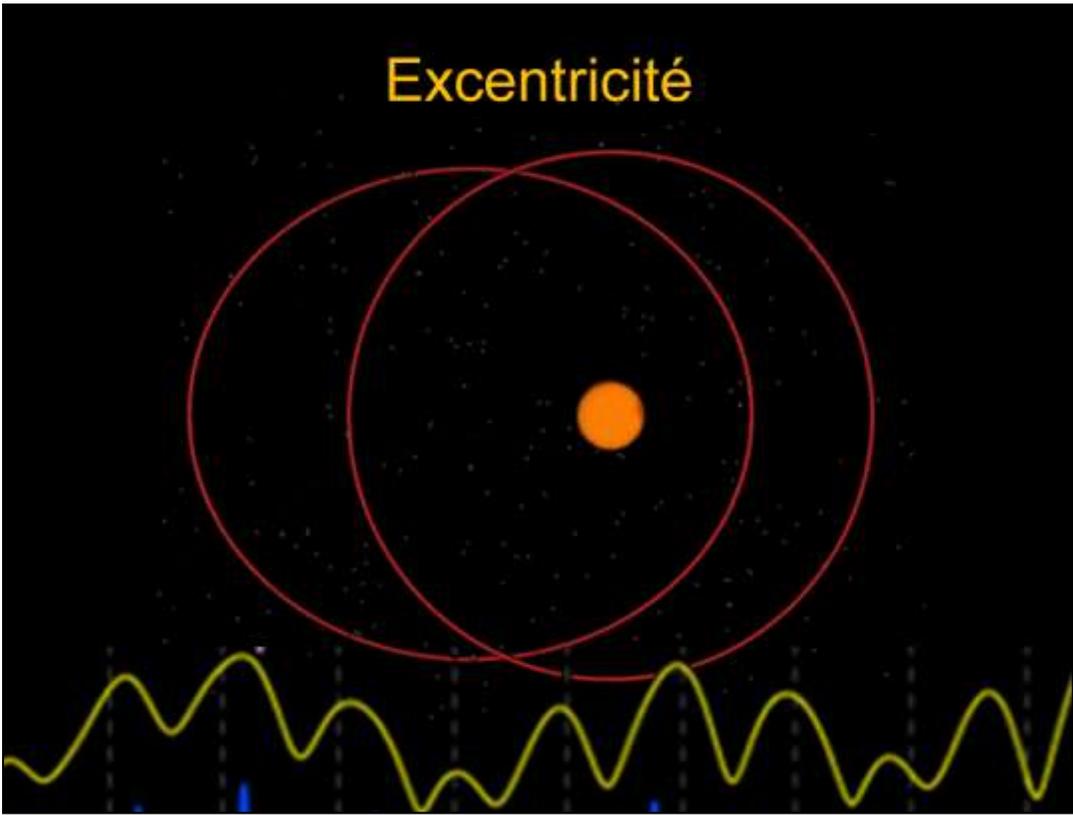
# Précession



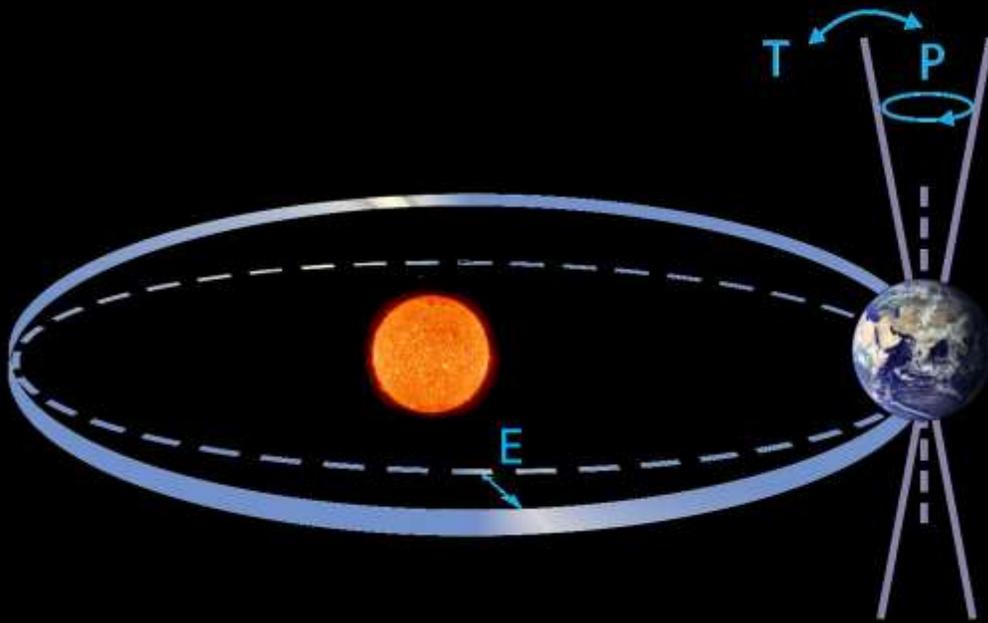
# Obliquité



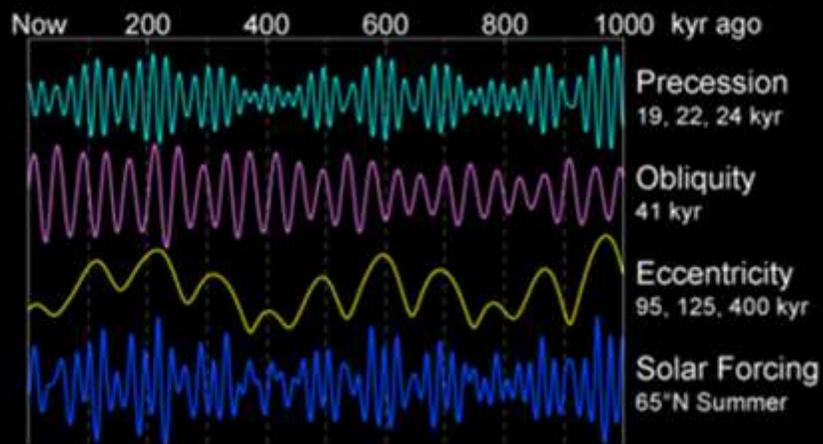
# Excentricité



# Les cycles de Milankovitch



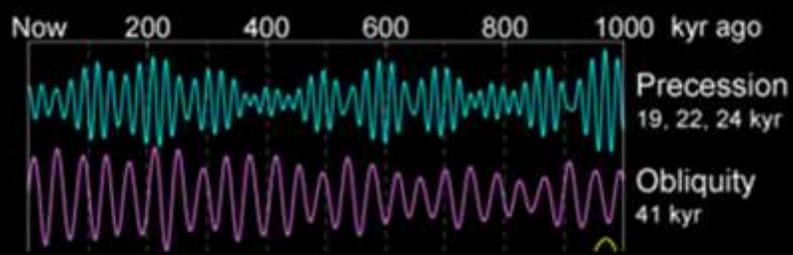
# Cycles de Milankovitch (1924)



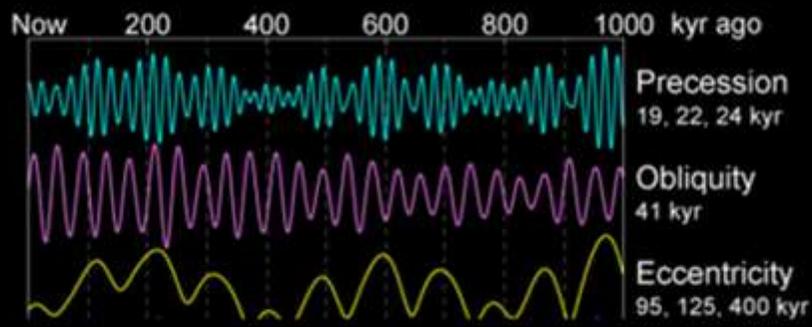
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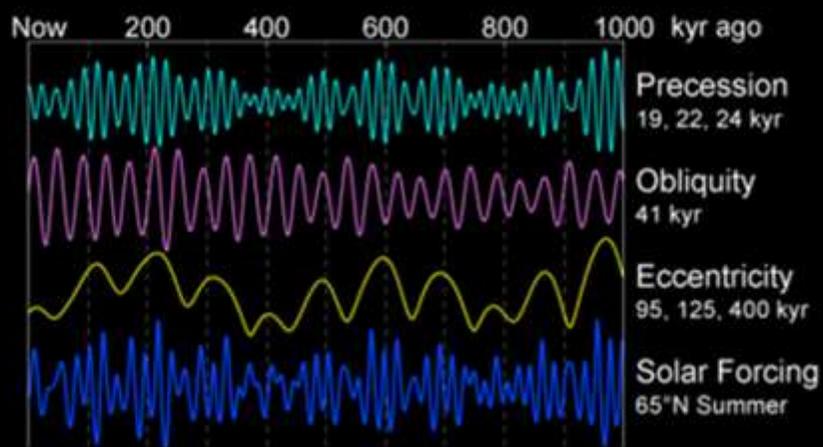
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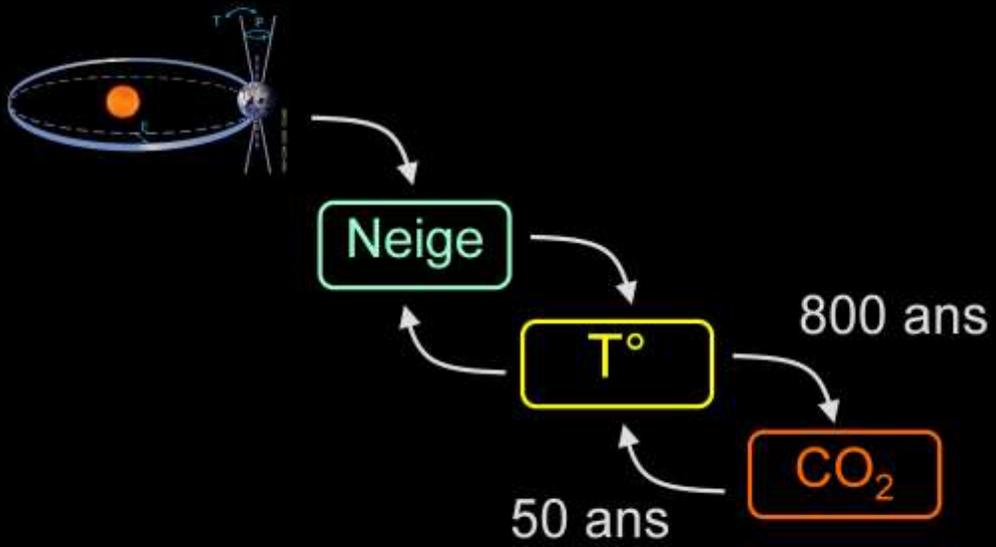
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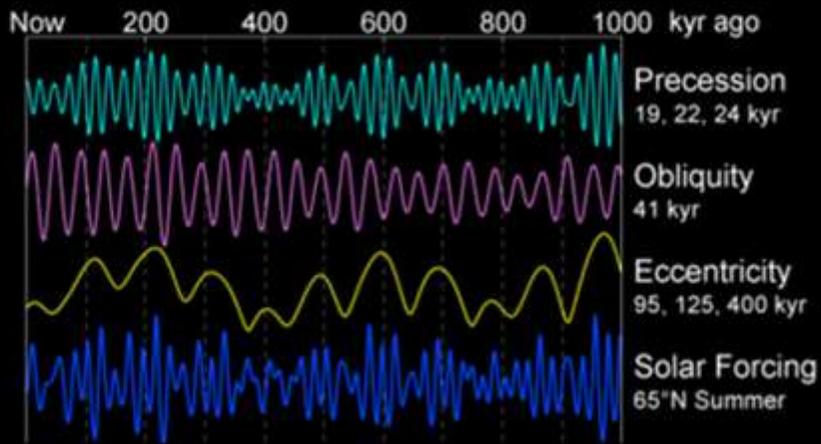
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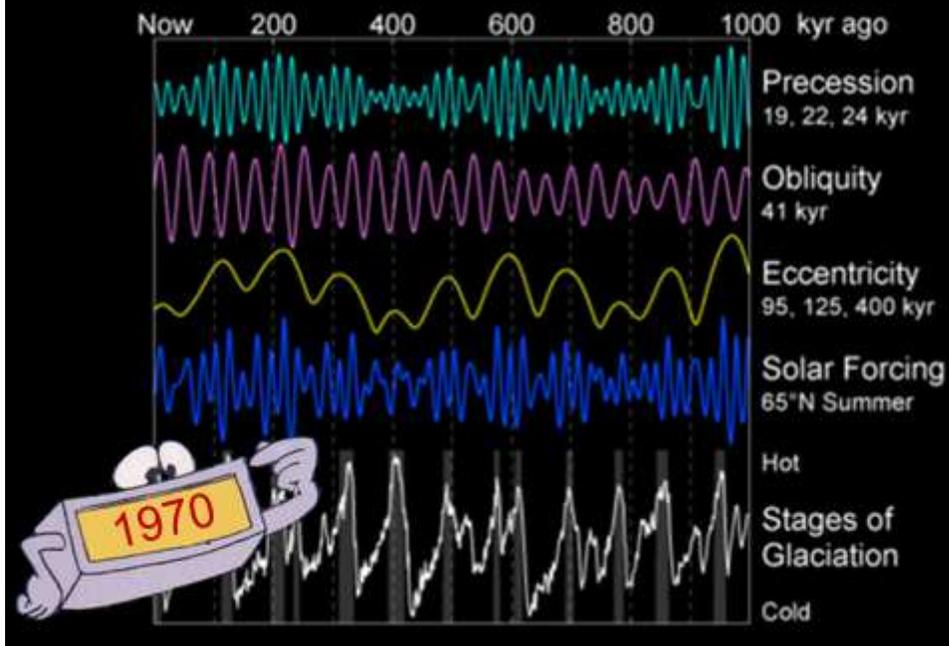
# Un peu de systémique



# Cycles de Milankovitch (1924)

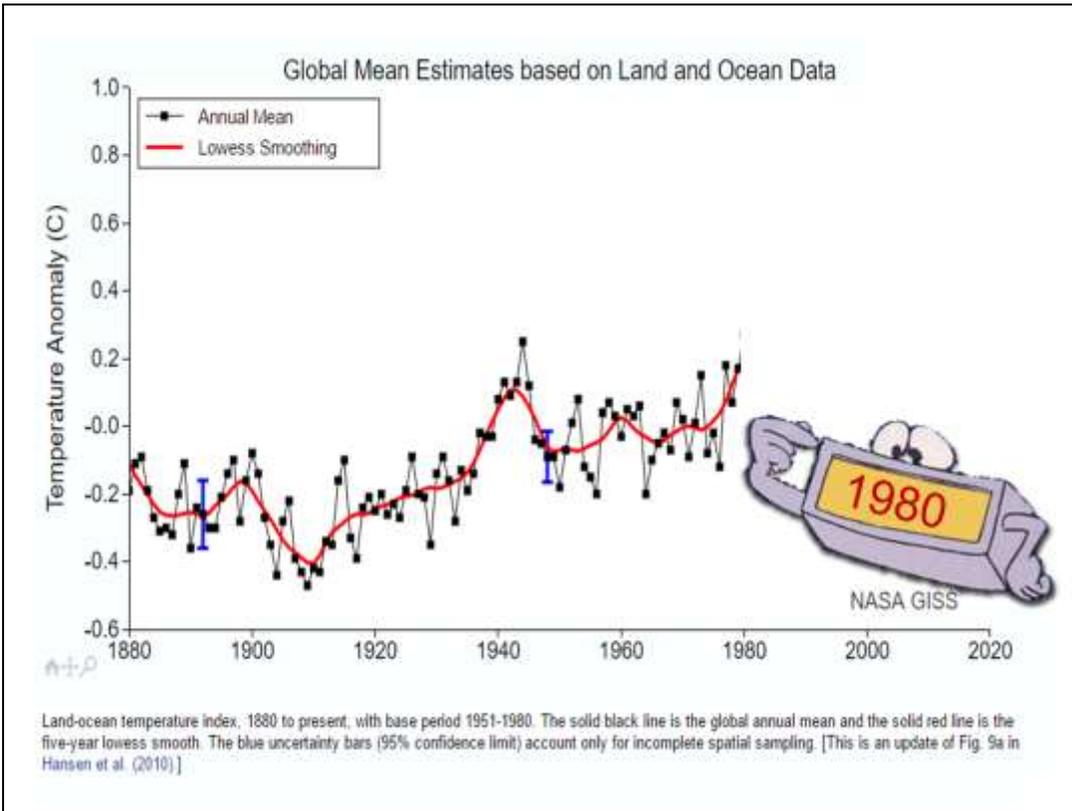


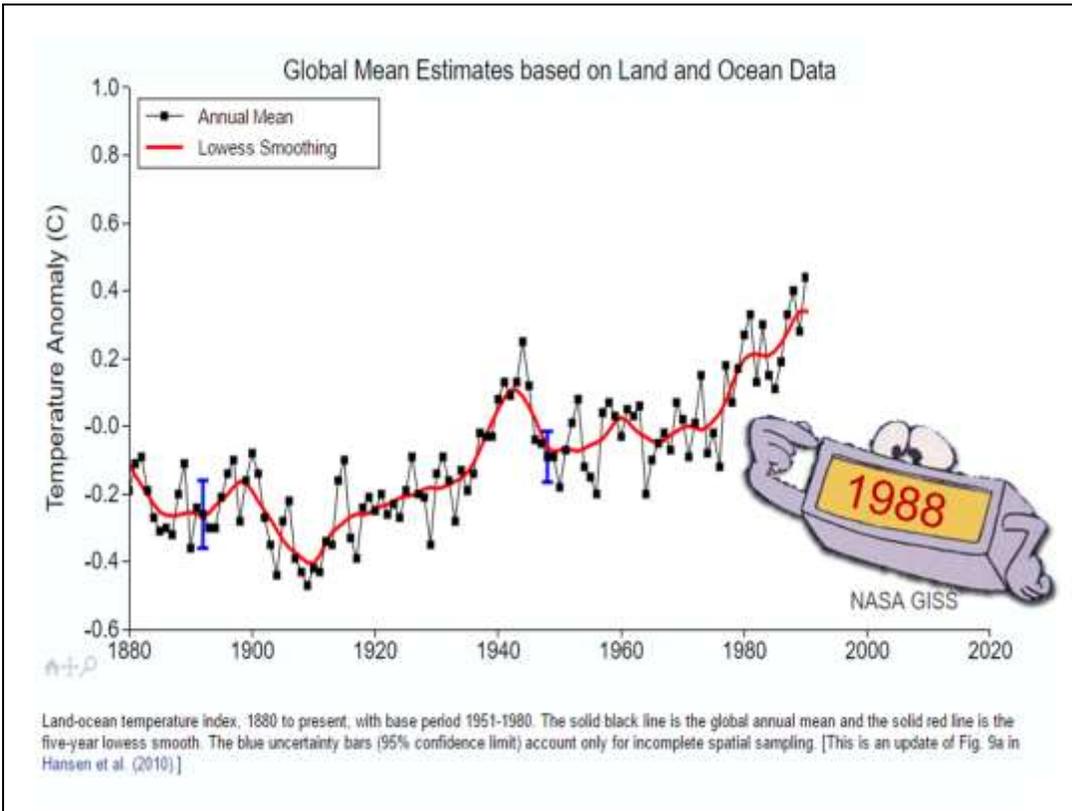
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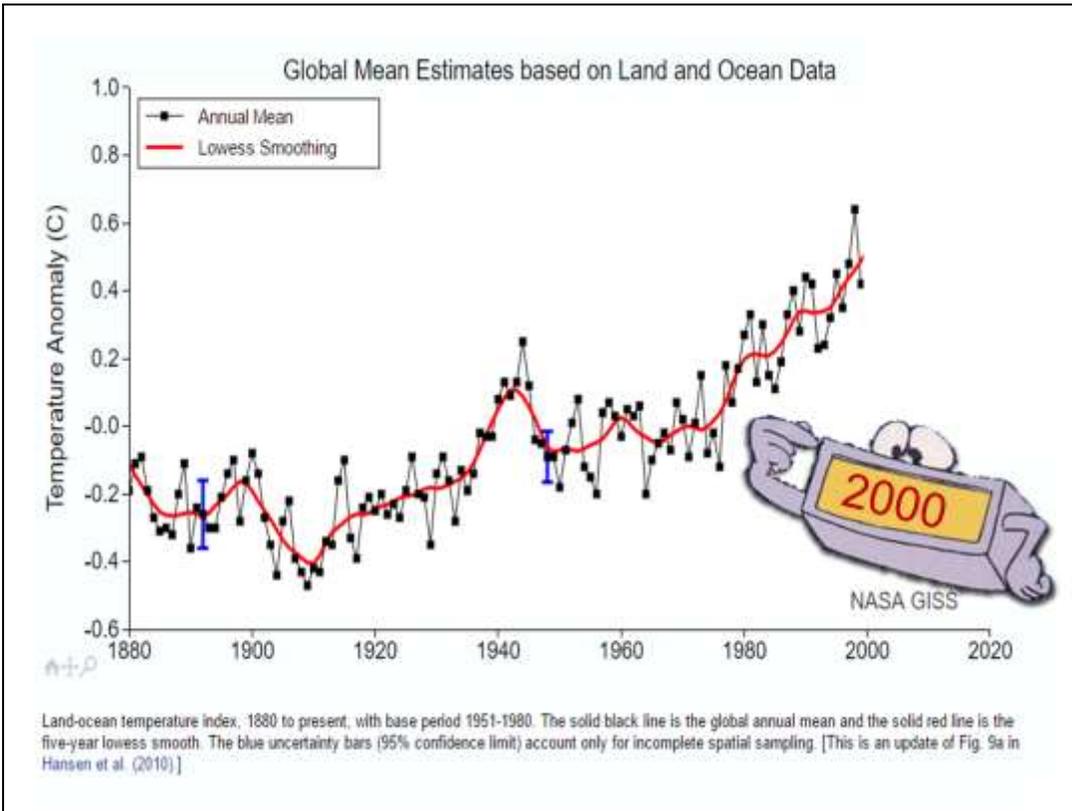


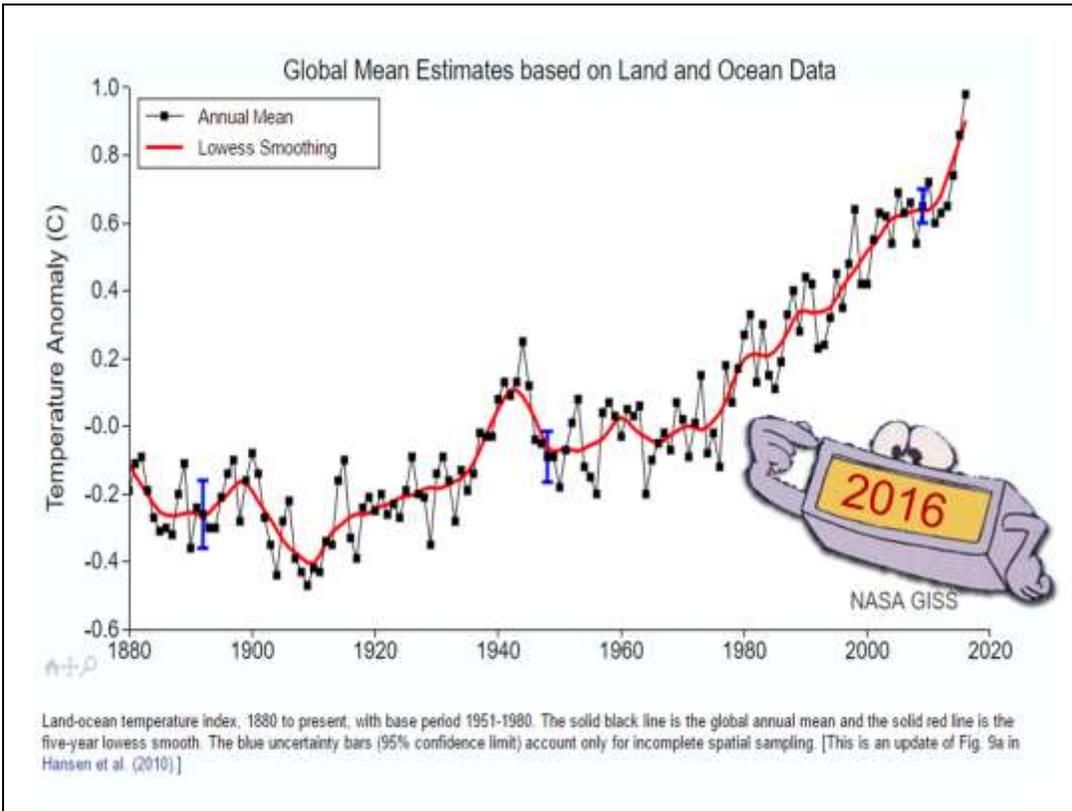
## James Hansen











## James Hansen

