



Climate change: evidences, communication, education

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**CENTRO
EPSON METEO** 

About us ...

... a highly reliable weather service provider, operating in the field of the applied research in meteorology and climate, providing valuable products to industry, media, public and private sectors, including educational activities for school and society

www.meteo.expert

...the experts of meteo

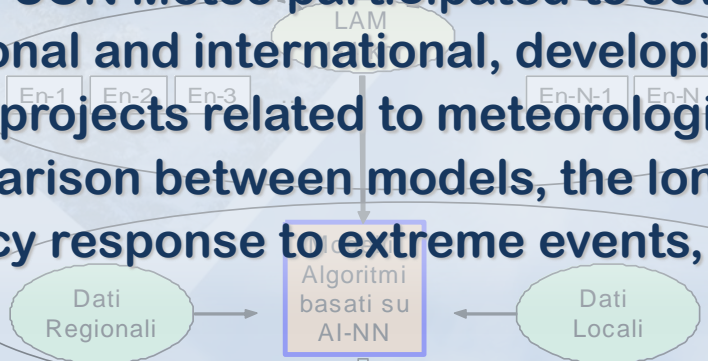
Scientific activities, modeling, projects and education

Previsioni globali e regionali del CEM:



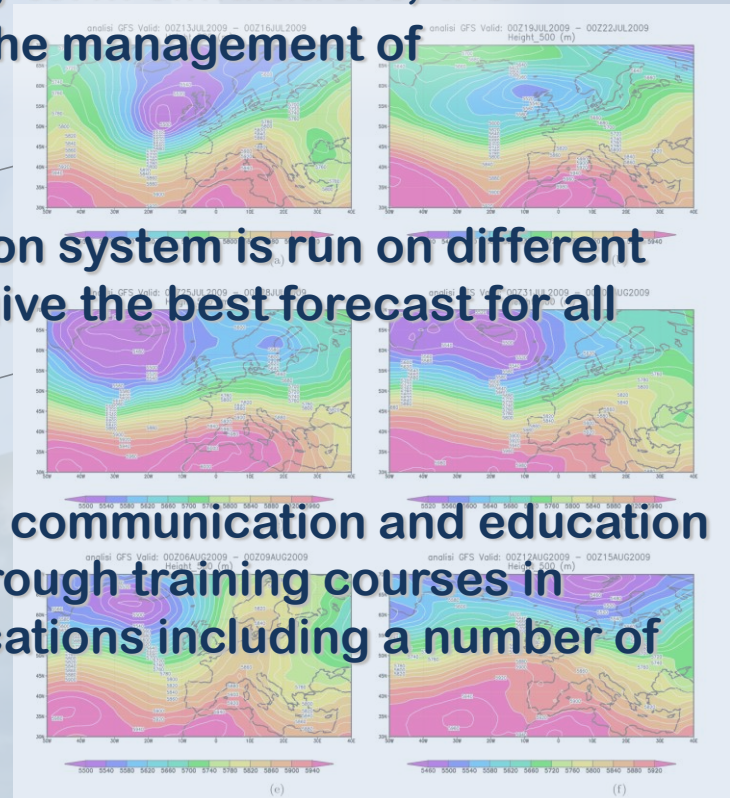
Centro EPSON Meteo participated to several scientific projects, both national and international, developing various innovative research projects related to meteorological and climate analyses, the comparison between models, the long-term simulations, the emergency response to extreme events, the management of water.

Alta risoluzione Modelli nella Previsione Numerica. Opzione per Ensemble



Osservazioni:

- Our multi-model ensemble prediction system is run on different domains and spacetime scales to give the best forecast for all application



Analisi del rischio expertise:

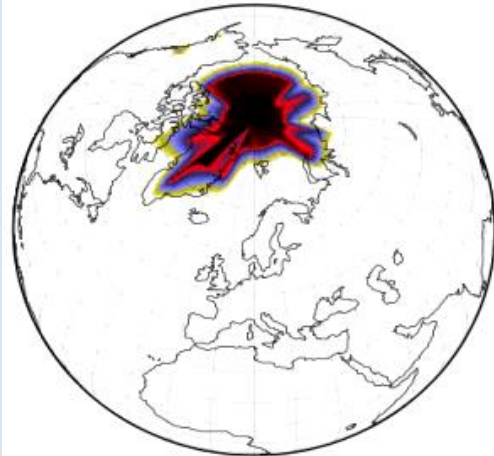


- Several activities are related to communication and education on weather and climate also through training courses in meteorology and several publications including a number of books.

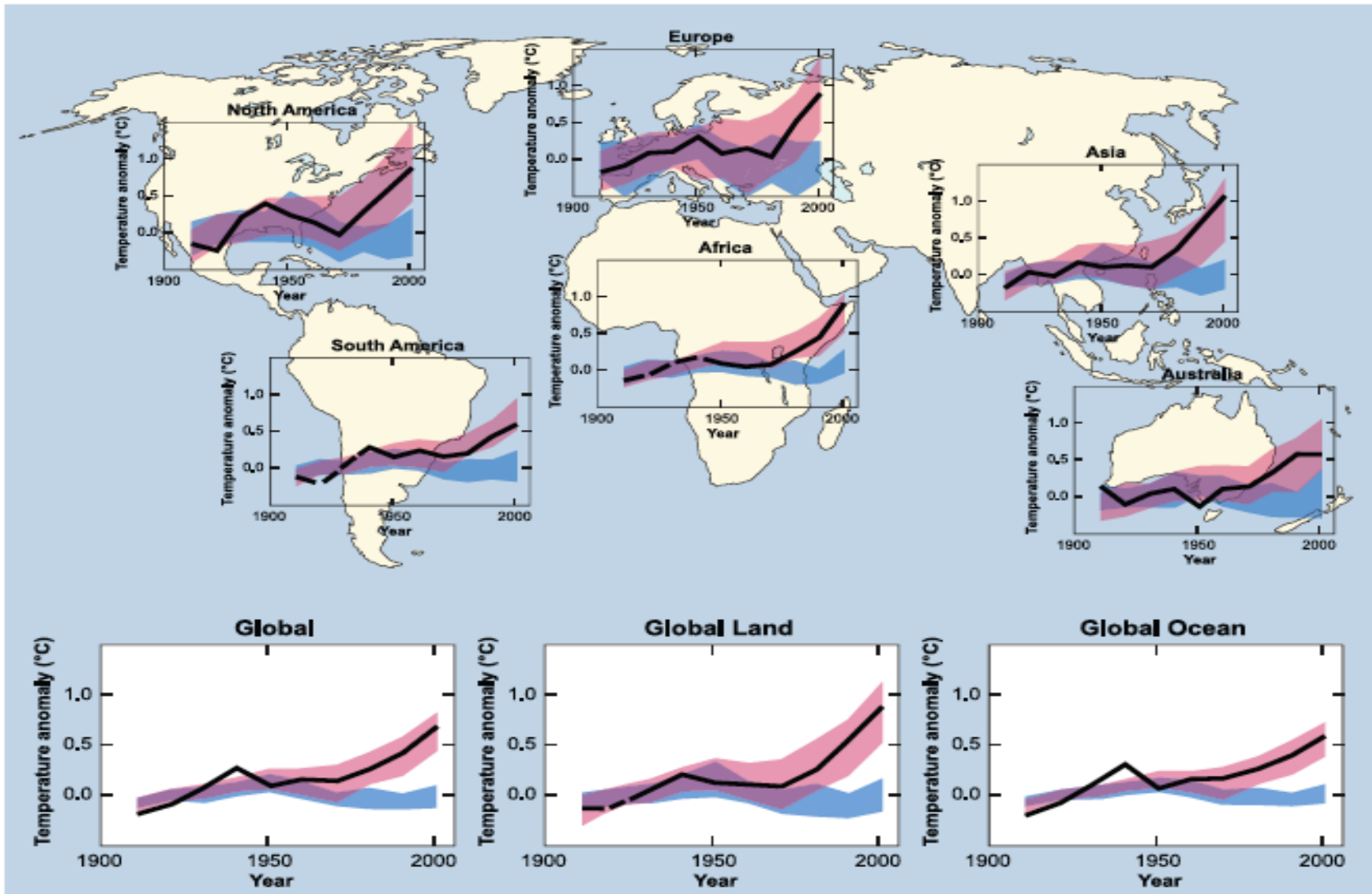
Climate Change

**Arctic ice and snow cover evolution
in July, from present day to 2050**

**Darker colours mean greater
depths, light red colour means
thinner layers, white means no
ice or snow**

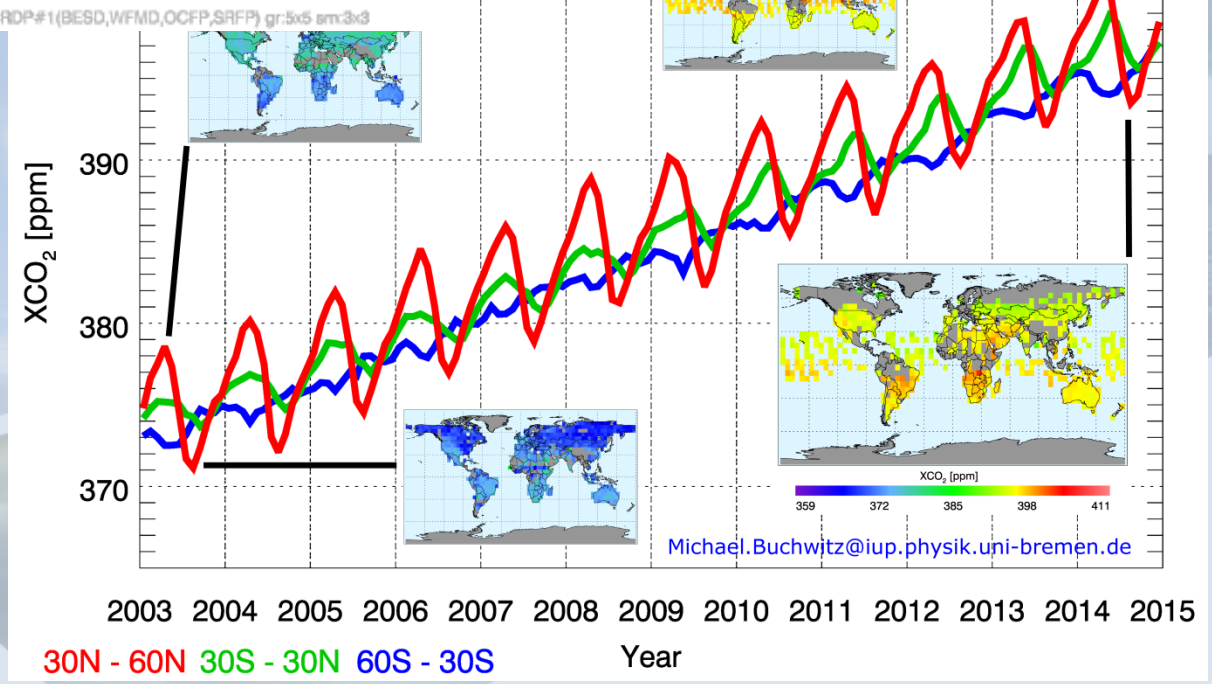
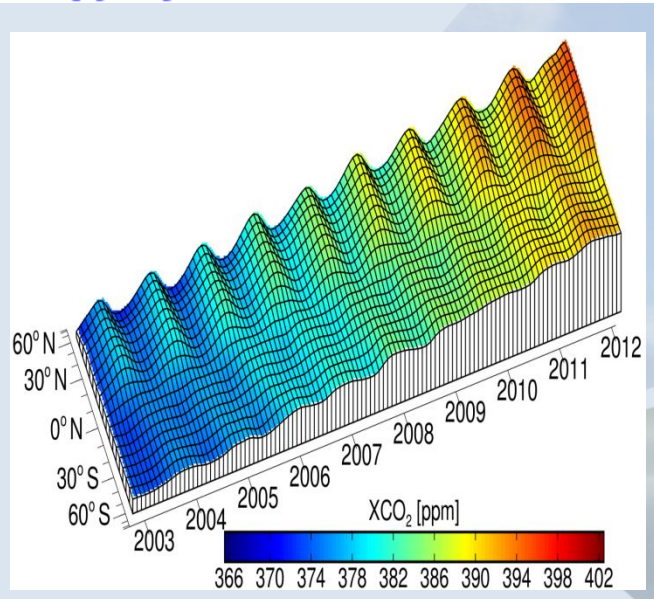
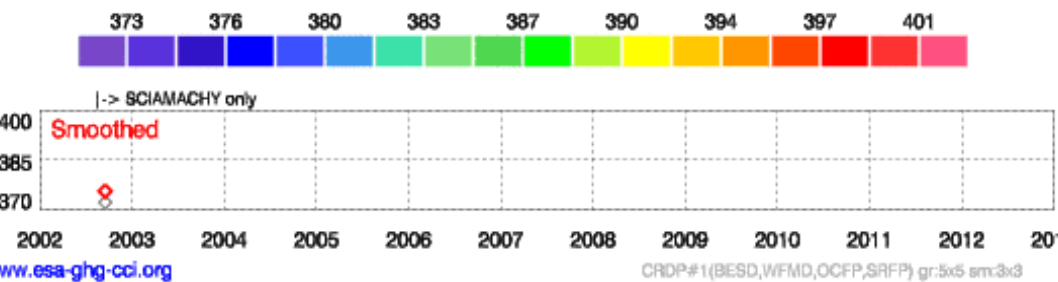
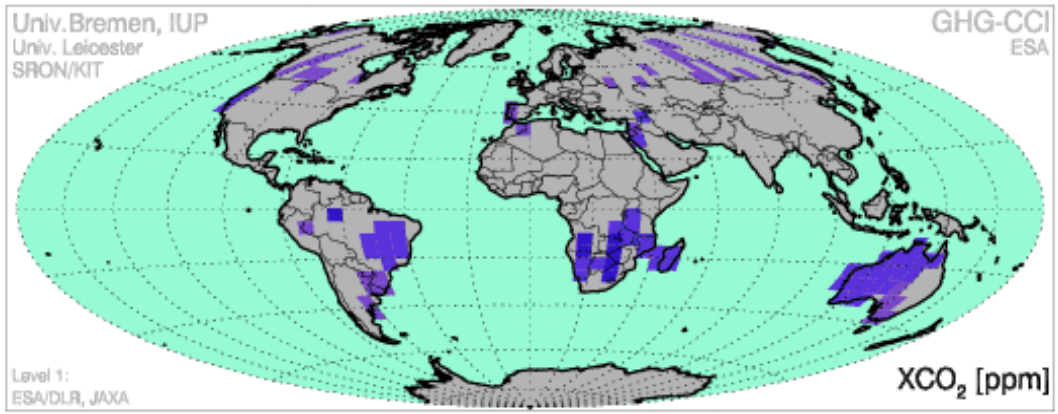


GLOBAL AND CONTINENTAL TEMPERATURE CHANGE

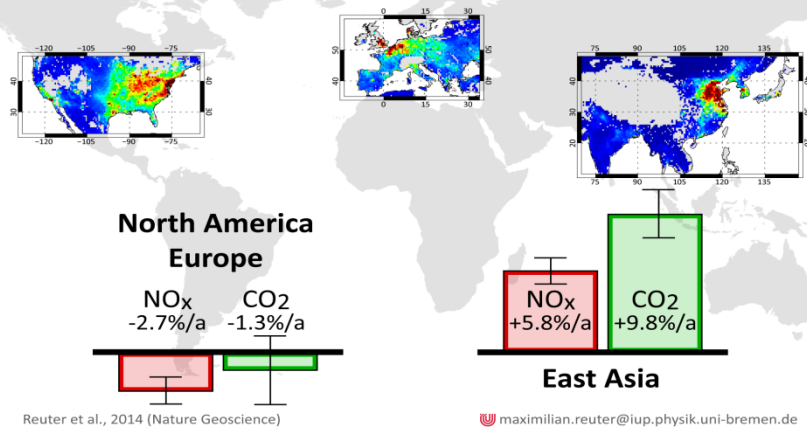


models using only natural forcings
 models using both natural and anthropogenic forcings

observations



Satellite derived trends of anthropogenic NO_x and CO₂ emissions

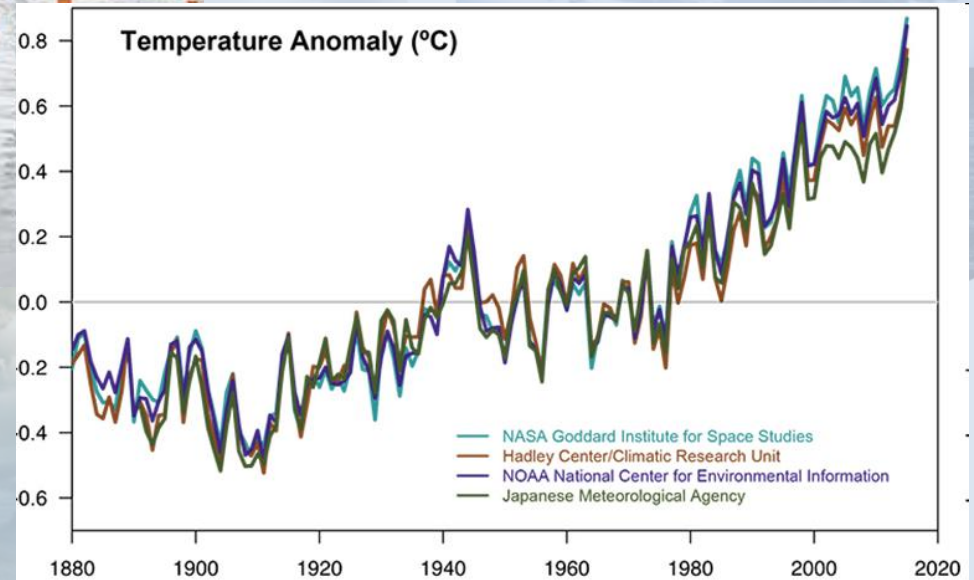
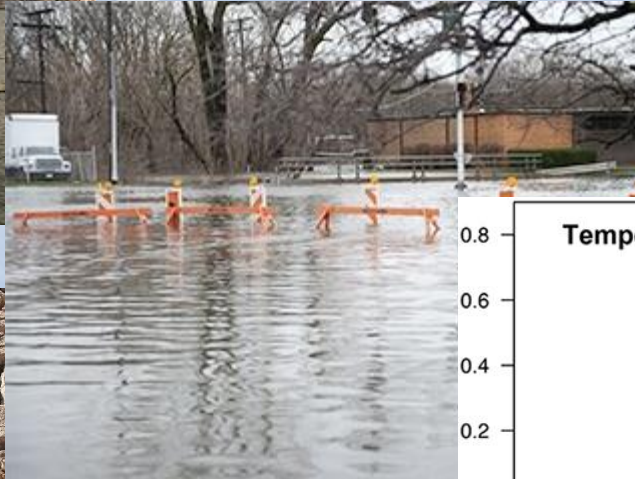


Reuter et al., 2014 (Nature Geoscience) maximilian.reuter@iup.physik.uni-bremen.de

Michael.Buchwitz@iup.physik.uni-bremen.de



Temperatures will continue to rise
Changes in precipitation patterns
More droughts and heat waves
Sea level will rise 0.3-1.2m by 2100
Arctic likely to become ice-free



Communicating climate

Previsioni globali e regionali del GCM

International conferences are useful but not for everyone

National and local events that feed into or support the

international event may be more useful.

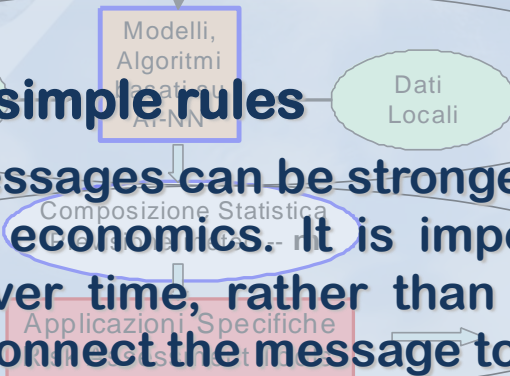
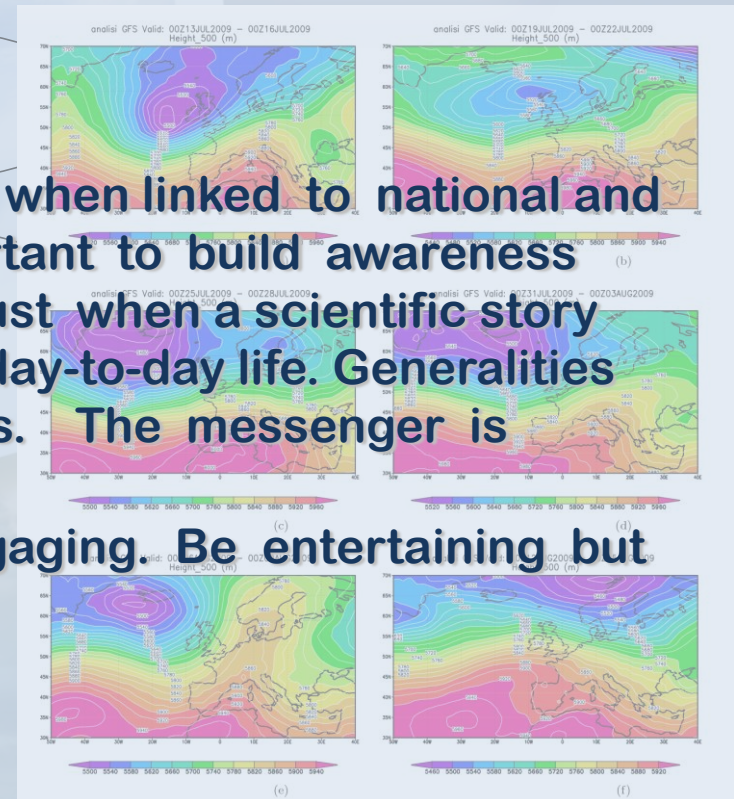
Cities and mayors in particular organize events that can be interesting to local audiences.

Alta risoluzione
Modelli per la
Previsione Numerica
Opzioni
Ensemble:

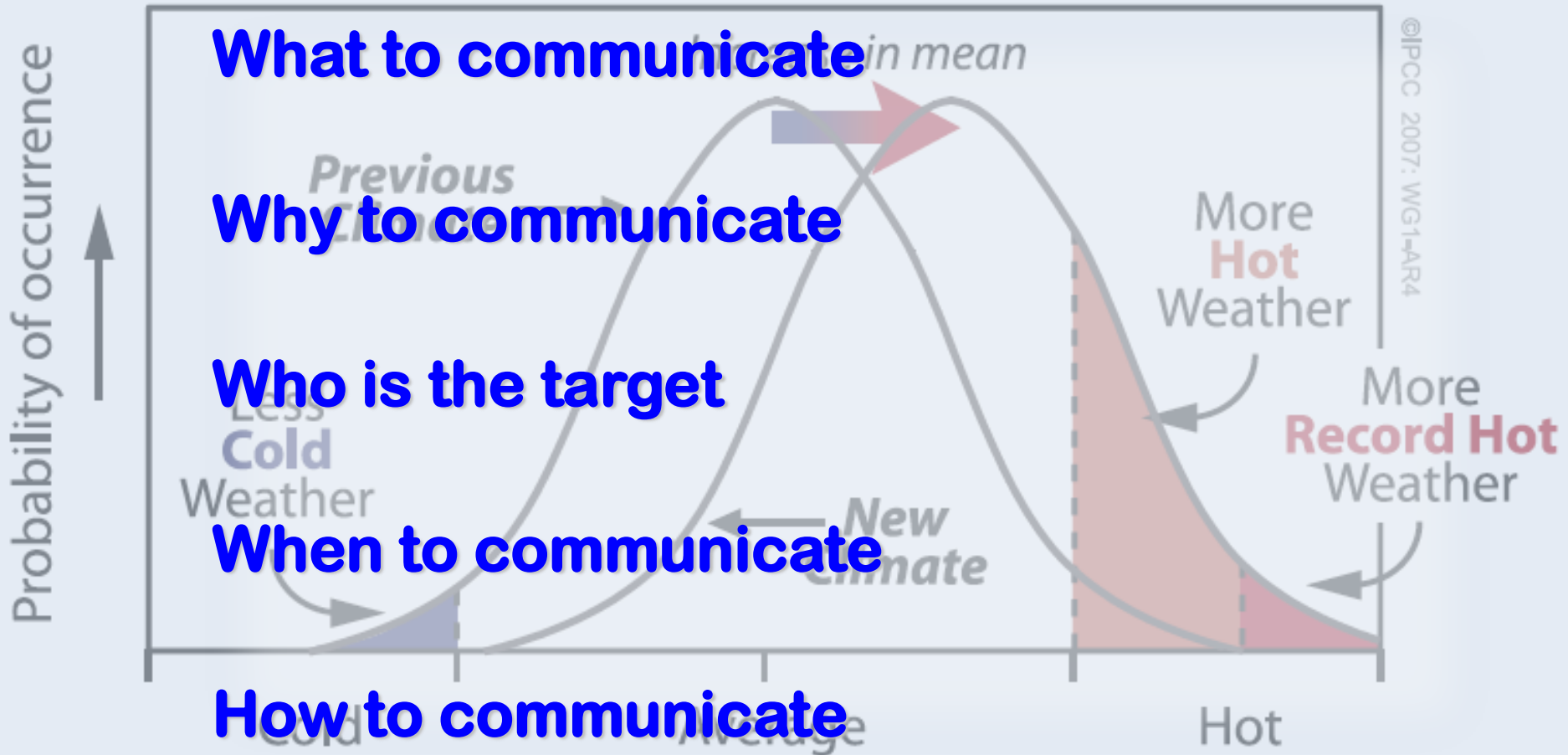
Osservazioni:

A couple of simple rules

- Climate messages can be stronger when linked to national and household economics. It is important to build awareness steadily, over time, rather than just when a scientific story appears. Connect the message to day-to-day life. Generalities are less compelling than specifics. The messenger is important
- Don't patronize but try to be engaging. Be entertaining but don't trivialize.



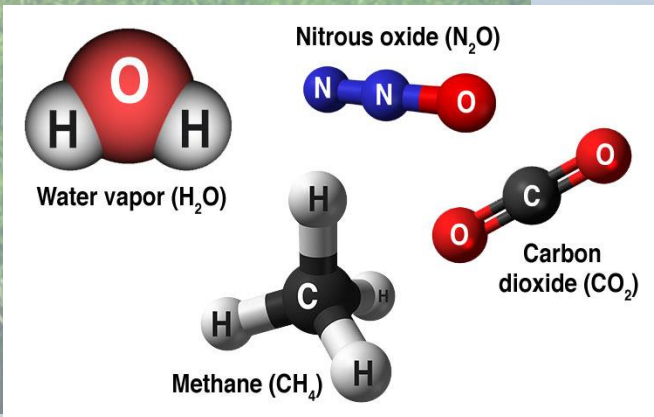
Communicating climate change



What to communicate

Should cover:

- What causes climate change
- Evidences
- Impacts
- Adaptation and Mitigation



Why communicate

- To maintain life
- To avoid the predicted catastroph
- To reduce pollution and change behaviors
- To inform, empower and mobilize
- To inspire decision makers
- To be ethical
- To inform on how to adapt

Carbon Dioxide

LATEST MEASUREMENT: March 2017

405.6 ppm



Who is the target

- Public (students, communities, social groups)



- Decision makers



- Social and economic sectors



Target: economic sectors. What sensitivity?

Centro EPSON Meteo provides meteorological consulting and products to a variety of professional fields and both public or private businesses, using proprietary models and know-how:

- **gas and power utilities to support policies for production, storage and distribution of energy, with specific solutions for renewable sources**
- **railways, motorways, regional and local authorities for the operational management of winter plans**
- **Air navigation, general aviation to support handlers on weather emergency plans**
- **shipping, yachting, coastal sailing, and every inshore and offshore maritime activities**
- **Media and Television (Meteo.it, Mediaset group)**
- **every business activity related to weather and climate**

This sector has some knowledge about climate change but they haven't a clear idea of the impact on their business

This sector does not consider climate change and they have no ideas of the possible impact on their business

This sector has knowledge about climate change and they make considerations about the possible impacts on their activities

This sector has some knowledge about climate change and they have some ideas of the impact on their business

When to communicate

- As often as possible
- After extreme weather events
- During special occasion
- In educational activities and programs



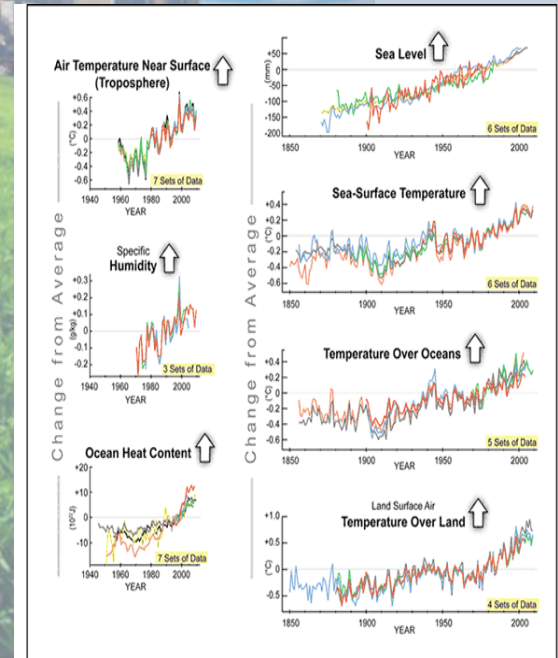
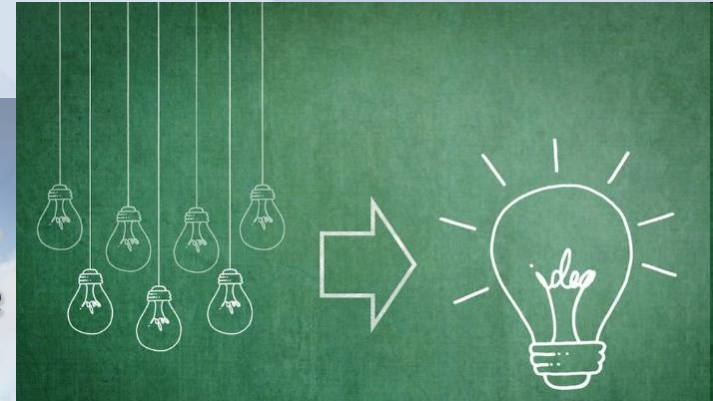
How to communicate

- Preparing oneself (passion, knowledge, be authoritative)

- Innovation: organize discussions

- Know data and resources about climate change

- Leveraging all communication media



Meteorology and Climate in Schools

Centro Epson Meteo is involved in education. Getting to know meteorology and understanding weather forecasts is very important because atmospheric events affect our daily life influencing our choices that go from the decision of what mean of transportation get to go to work to when to leave on a day trip.

The “School Project” was created with the intent to explain this complex science to the next generations: Centro Epson Meteo meteorologists teach classes for **nearly 100 schools in one year**, for students **from elementary school up to high school**.



Meteorology and Climate in the Society

Weather Lab

Centro Epson Meteo recreates weather phenomena with dedicated experiments, from recreating a cloud in a bottle to producing a water tornado.

Physics of the atmosphere can be **Simple and Fun**: have you ever considered how heavy air or clouds could be? Any explanation goes through fun facts in order to intrigue and explain the basics of meteorology.

UNDERSTANDING OUR SCIENCE IS A FUNDAMENTAL STEP TOWARD AWARENESS ABOUT A CHANGING CLIMATE



Mitigate global warming

Possible actions

MITIGATION means acting to counteract the increasingly severe negative impacts of the scientifically established human-caused global warming trend of climate change. Mitigation has a cost, but not mitigating climate change has a bigger cost. Think of mitigation as insurance within a climate risk management context. For example, house insurance costs something, but insurance payments are much less onerous than rebuilding your house if it burns down. For climate it is now clear that "Business as Usual" without mitigation will lead to disastrous impacts.

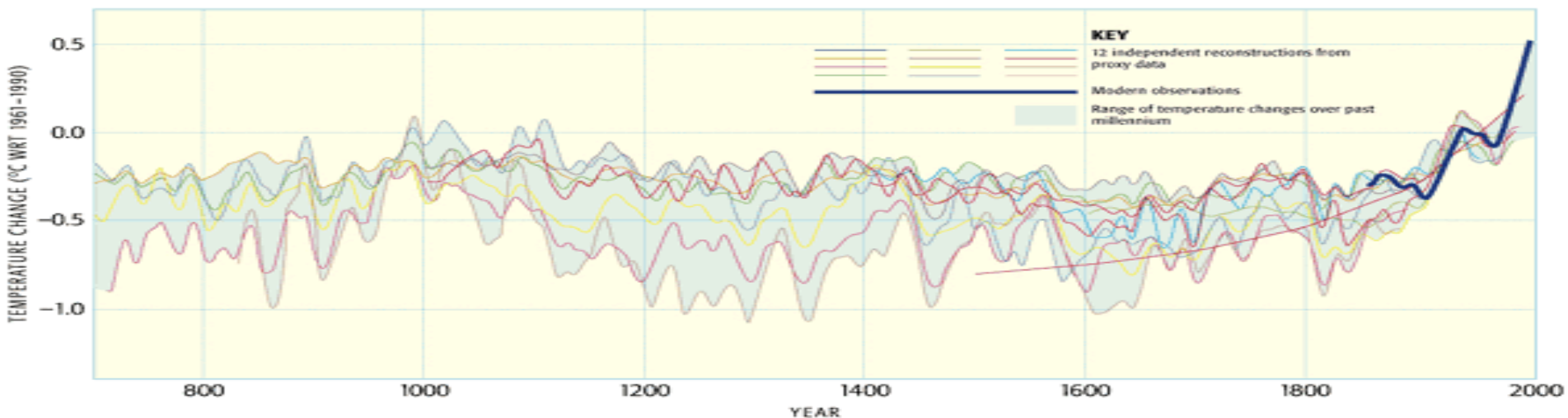
Personal practice is **IMPORTANT!!!**



Mitigate global warming

There are many personal actions we can practice to contribute to reduce our impact on the Earth climate

NORTHERN HEMISPHERE TEMPERATURE CHANGES OVER THE PAST MILLENNIUM



Conclusions

- **If climate model projections prove to be even moderately accurate, global temperatures by the end of this century will be higher than at any time during the last 120,000 years.**
- **Failure** to introduce some form of global greenhouse gas emission **reduction strategy** will merely extend the timeframe of global warming that humanity is already witnessing, with very **serious consequences** for ecosystems and mankind, including risks of **unsustainable** social and economic **costs** which can lead to **unpredictable direct consequences** in many parts of our planet.
- **We need to communicate evidences, causes, effects and how we can mitigate our impacts in a simple and effective way reaching as many as people, social and economic sectors, decision makers**



THANK YOU!!!

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