



AEMASE III

Paris, October 3-4, 2017



Teaching Climate Change in School

Professeur Nejib Kallel
GEOGLOB Laboratory, University of Sfax, Tunisia

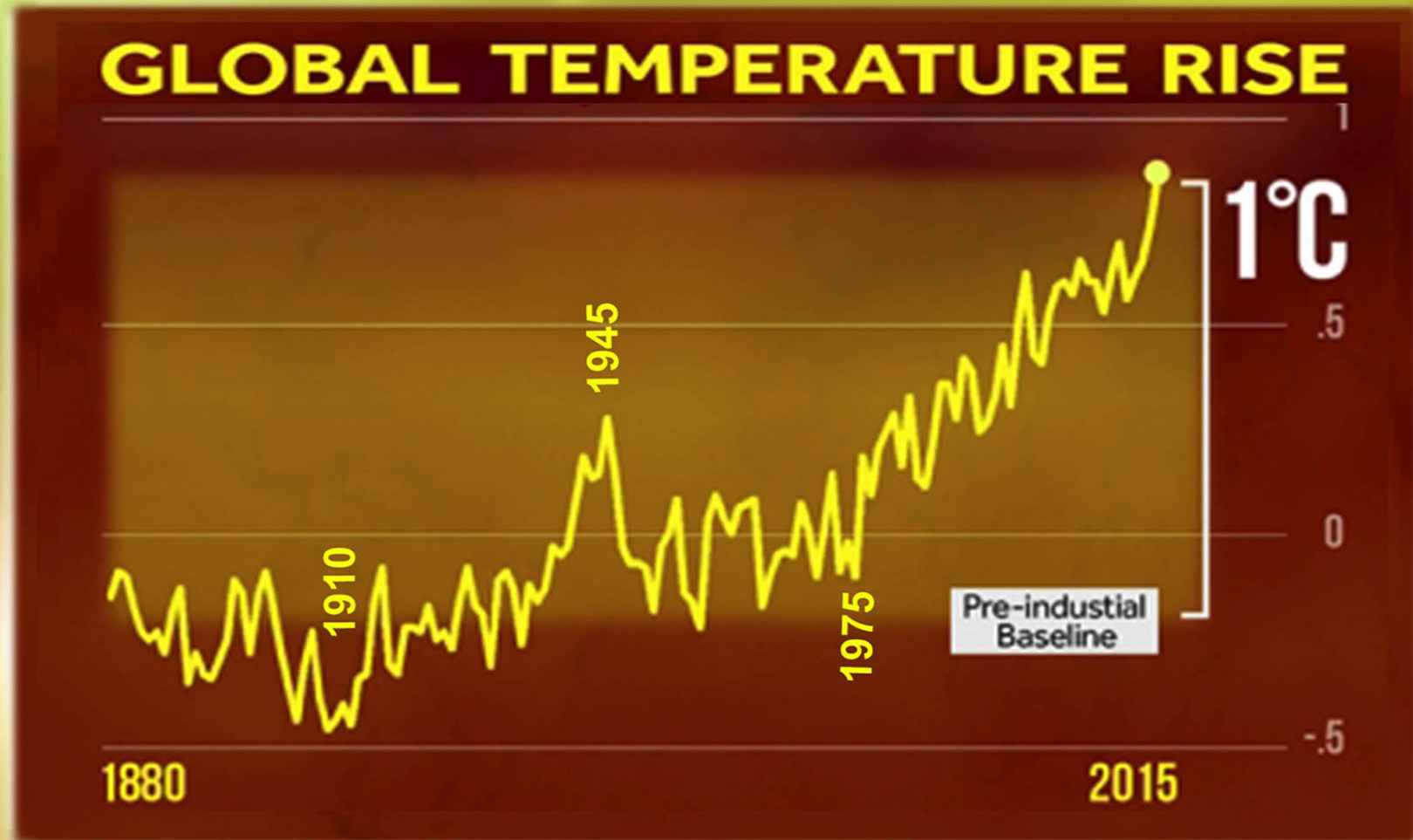


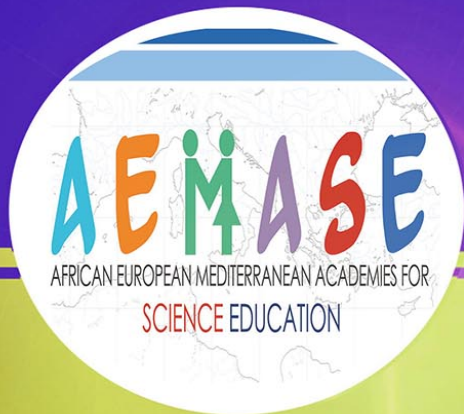
INSTITUT DE FRANCE
Académie des sciences



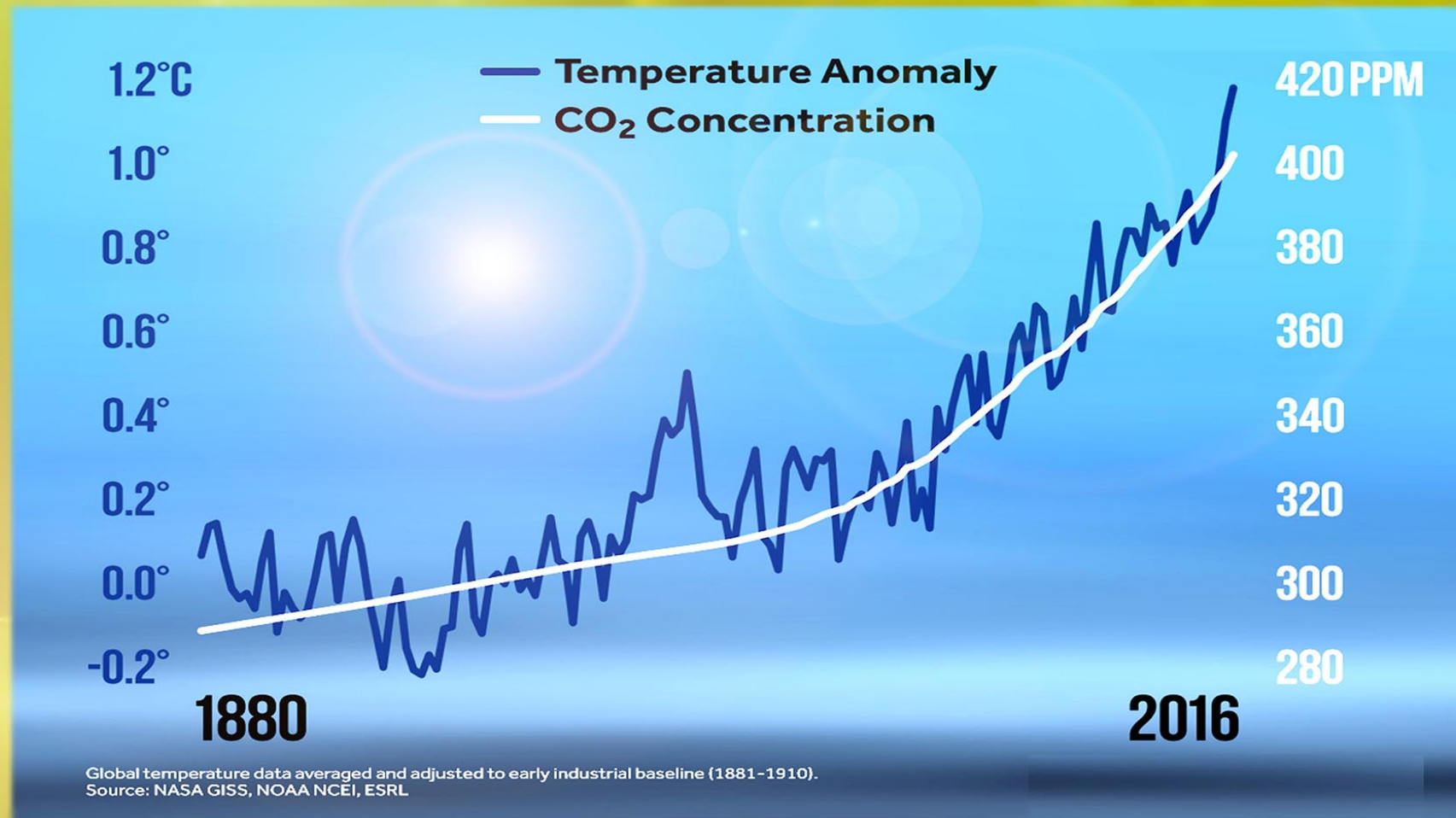


Global Surface Temperature



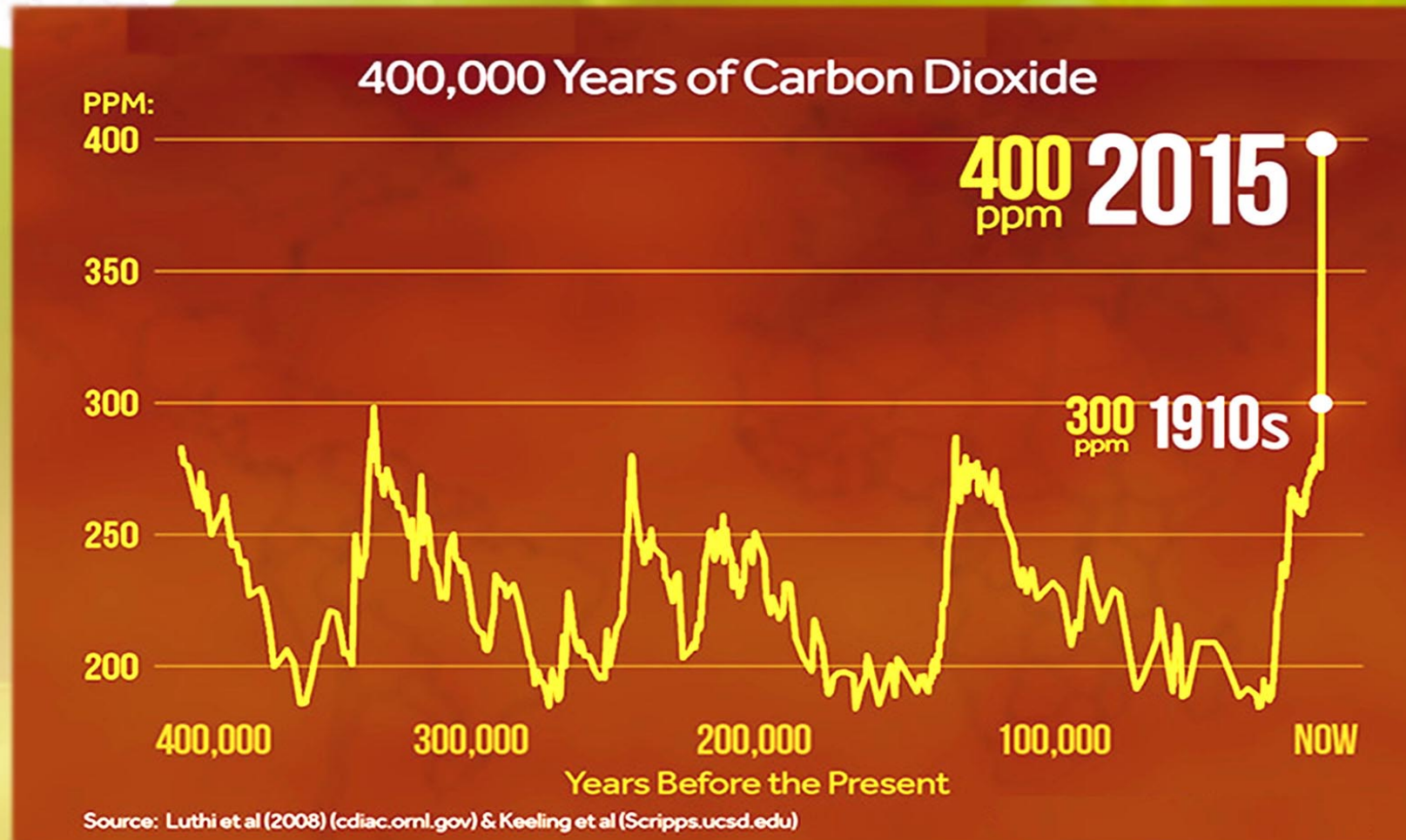


Correlation between Global surface temperature & carbon dioxide records

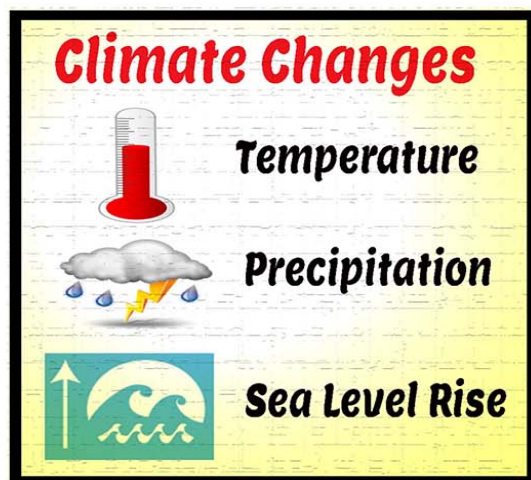




Carbon dioxide record in Polar Ice Core



Climate Change Impacts



Health Impacts

Weather-related Mortality
Infectious Diseases
Air Quality-Respiratory Illnesses



Agriculture Impacts

Crop yields
Irrigation demands



Forest Impacts

Change in forest composition
Shift geographic range of forests
Forest Health and Productivity



Water Resource Impacts

Changes in water supply
Water quality
Increased Competition for water



Impacts on Coastal Areas

Erosion of beaches
Inundate coastal lands
Costs to defend coastal communities

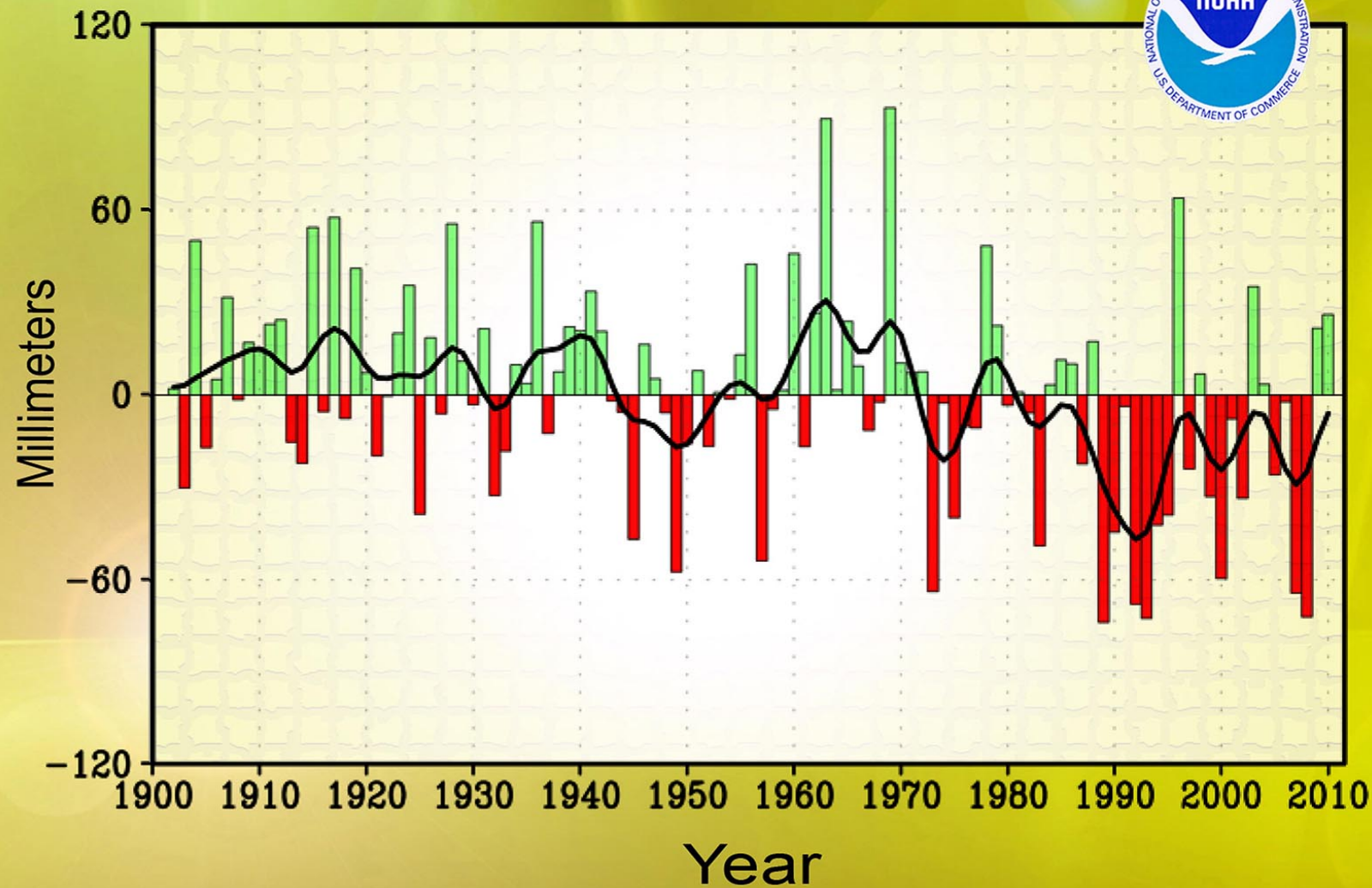


Species and Natural Areas

Shift in ecological zones
Loss of habitat and species



Global Change and Mediterranean Precipitation

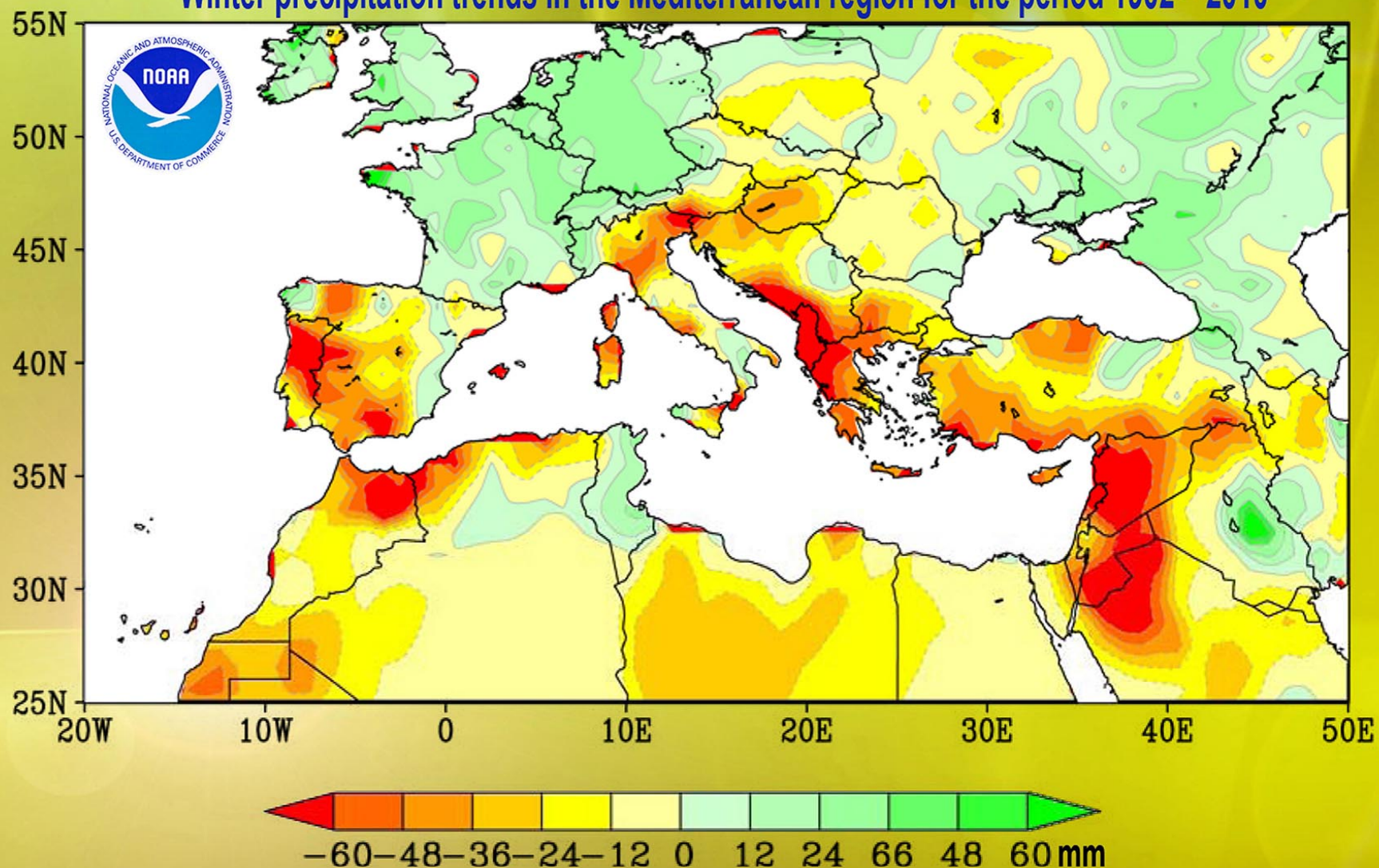




Global Change and Mediterranean Precipitation



Winter precipitation trends in the Mediterranean region for the period 1902 – 2010





Climate Change Awareness and Concern



For the third year in a row, **millennials** who participated in the **World Economic Forum's Global Shapers Survey 2017** believe **climate change is the most serious issue affecting the world today.**

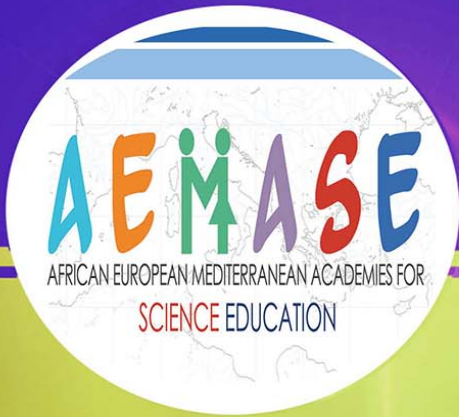
- ★ Nearly half (**48.8%**) of the more than 31,000 survey participants, who were **ages 18 to 35 in 186 countries**, chose climate change as their top concern, and **78.1%** said they would be willing to change their lifestyle to protect the environment.
- ★ Over **91%** of young people “agree” and “strongly agree” with the statement “**science has proven that humans are responsible for climate change**”

➔ The lowest agreement level is from the Sub-Saharan African region, with only **49.6%** of respondents who “strongly agree”

➔ In the low-income category, only **37.8%** “strongly agree”, while across other income-level groups this number is not less than **71%**.



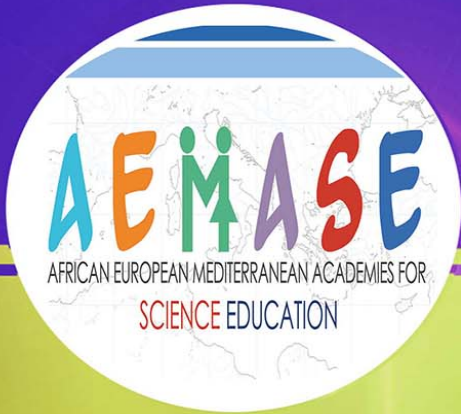
COMMITTED TO
IMPROVING THE STATE
OF THE WORLD



Teaching using data



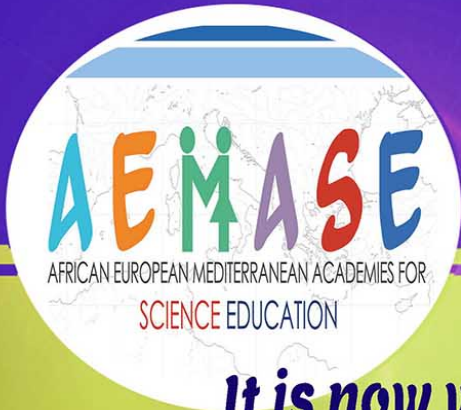
- ★ **Climate change** may be a political hot potato in some cases. But **data are indisputable**. There's really no pushback from students or parents because the measurements speak for themselves.
- ★ Teaching about **climate change** is all about the **numbers**. Students should swim in data sets from the International Panel on Climate Change (**IPCC**), which include simplified summaries.
- ★ Remote-sensing data are also available from **NASA** and **NOAA**.
- ★ Teacher has to “**Be honest about what we know, what we don't know, and what we would like to know,**”.
- ★ Sometimes students will say ‘**I don't believe in climate change,**’ and we have to say, ‘**it's science, not a religion. You don't have to ‘believe’ in it, you just have to look at the data,**’



Make It Local



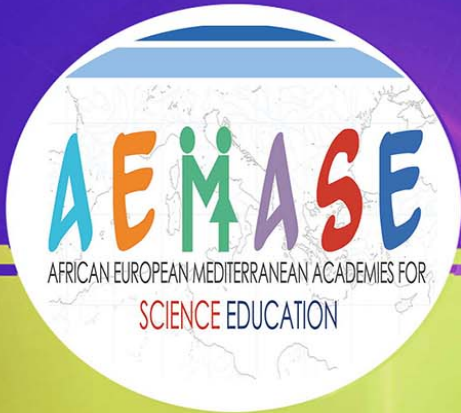
- ★ The kids have a huge connection to the outdoors, and they can see the changes that are happening.
- ★ At the same time, while the **local angle** might catch their interest, students do need to understand the **global implications** of **climate change**.
- ★ Nor does your personal **pollution** stop over your own home.
- ★ Yes, you're going to have local solutions, but this is a **global problem** and the earth is a **dynamic system**.



End with Inspiration



- ★ It is now well established that the large-scale warming is accompanied by increased frequency and/or intensity of extreme events, such as heatwaves, heavy rainfall, storms, coastal flooding, drought ...
- ★ It's tempting to pull the covers over your head. But educators need to make clear that students can make a difference. It's really important for teachers to communicate that we can do something—we can act locally, and we can act at the country level.
- ★ The goal is to inspire students, not scare them to death! We have to stress that we can do something about this. It's very much empowering.
- ★ Students are inspired to hear that on windy days, Germany runs on 100 percent renewable energy. "Find the bright spots."



Lessons From the Past



Some case studies of Past Climate Changes can help kids to better understand the behaviour of climate system.

Here also, we have to start with the local to catch the interest of kids

Many nice histories are known in the Mediterranean region:

- Past pluvial periods responsible for the recharge of Saharan deep aquifers**
- Relationship between climate and civilisations in the region (Pharaonic civilisation)**
- French revolution and the little ice age in Europe**