

# Modern technology and conflicts

Climate, energy and resources

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6.12. 2017  
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# Climate change

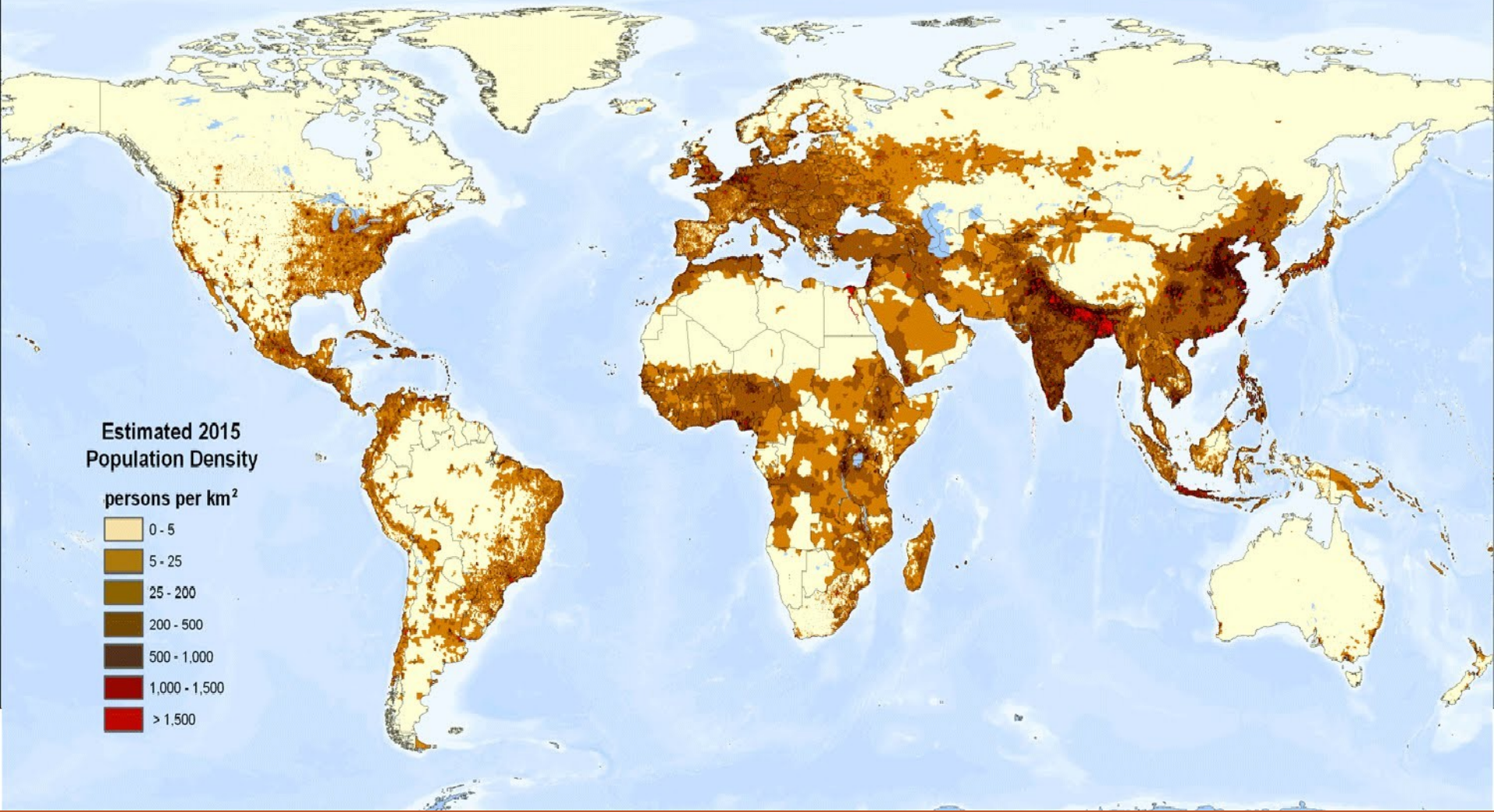
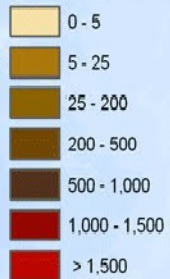
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- extinctions are historical norm
  - 99% of all species
  - most often due to climate changes
  - usually triggered by volcanic activity
- planet will survive, life and people will too
  
- geopolitics of climate change
  - lack of food and water
  - countries cannot adapt
  - migration and conflicts as a result
- all countries to be impacted
- “lifeboat” countries?

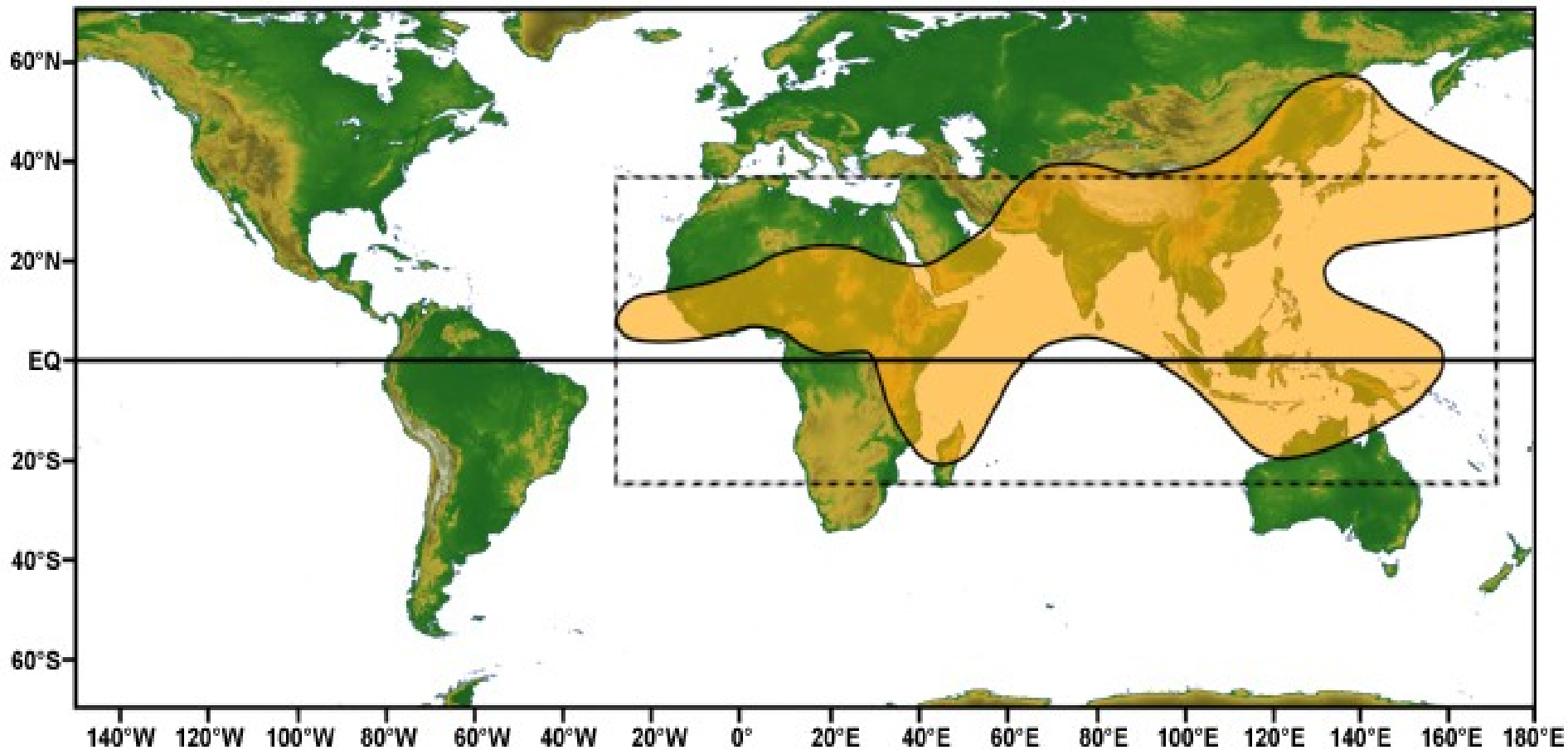


**Estimated 2015  
Population Density**

persons per km<sup>2</sup>



# Classic Monsoon Region





# Arctic

- new maritime routes
- new resources
- new farm land
- new conflict?

# Geo-engineering

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- influencing climate change intentionally
  - + unintentional effects of pollution
- the goal is to slow climate change down
  
- usually through increasing albedo (reflectivity)
  - SRM - Solar Radiation Management
- aerosol dispersal, buildings and engineering
- risk of unilateral actions and dependence
  
- or “carbon capture” technology
- artificial/organic



# Energy sources

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- buried sunshine(87%)
  - sunshine as biomass (7%)
  - sunshine as wind/heat (4%)
  - geothermal + nuclear fission (2%)
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- storing energy is still an issue
  - consumption is and always will be growing
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- nuclear fusion as savior?
  - [ITER](#), 2030?, \$20 000 000 000



## Extracting buried sunshine

- 2006, Indonesia, East Java, **Sidoarjo**
- natural gas drilling created a mud volcano
- 180 000 m<sup>3</sup>/day -> 10 000 m<sup>3</sup>/day
- area circa 10 km<sup>2</sup>
- fracking?





# Coltan

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- mined for niobium and tantalum content (capacitors)
- pretty much in all modern electronics
- circa 60% from Central Africa
- <https://www.youtube.com/watch?v=fPIB17PE2vM>
  
- “resource curse”, cause of conflict
- fuels slavery and civil war
- destroys environment too



# REE mining

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- 90% coming from single mining complex in Baotou, Northern China
- cerium, neodymium, yttrium, terbium, scandium, dysprosium, ...
- devastating to environment
- geopolitical tool for China
- other possible deposits?
  - Afganistán, DPRK ...

