Adapting to our future: Extreme Weather Events, a Worldwide Energy Revolution and Geoengineering options

Paul Belanger and Phil Nelson
OLLI WEST – SPRING 2017
Mondays 1-3 p.m. March 27th – May 15th, 2017

Part 1: Introduction: Climate, weather and extreme weather events

1. March 27th: Paul Belanger and Phil Nelson
    * Introduction: Meteorological fundamentals and how it relates to Climate change
    * The carbon dioxide thermostat:
        o How a little bit of exhaust warms the world.
        o Heat waves and distribution of heat.
        o Extreme weather manifested in distribution curves with shifting means.
    * 6-fold ways humans are involved in change
        o Personal
        o Family/friends/neighbors/social media
        o Communities/towns/cities
        o State level
        o National
        o International

2. April 3rd: Phil Nelson
    * Too much water.
        o Recent extreme weather events in the U.S. and elsewhere: floods and tropical storms.
        o Event attribution: was that flood caused by climate change?

3. April 10th: Phil Nelson
    * Not enough water.
        o Heat waves, droughts, and wildfires.
        o Round two of event attribution.
        o Migration of humans and biota.

Part 2: Paul Belanger: Worldwide Energy Revolution

4. April 17th: Paul Belanger
    * Baseload power: the role of Coal/Natural gas and Nuclear
    * Nuclear options: Fission reactors, Fast-breeder reactors, Fusion possibilities,

5. April 24th: Paul Belanger
   - Photovoltaics (PV),
   - Wind
   - Concentrated Solar Power (CSP)

6. May 1st: Paul Belanger
   - The myth of baseload; the need for balanced power
   - The energy storage issue
     – battery storage or
     – hydrogen fuel storage
     – other

7. May 8th : Paul Belanger and Phil Nelson
   - NREL FIELD TRIP: **TDB – I.E TENTATIVE**
     o PV technology
     o Storage technology

Part 3: Paul Belanger and Ron Larson: Geoengineering: particularly with respect to biofuels and biochar

8. May 15th:
Geoengineering:
   - Solar Radiation management (SRM)
   - Carbon Dioxide Removal (CDR) – especially Biofuel potential and BIOCHAR