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| --- | --- | --- | --- | --- |
| **causes** | **Problem (ie impacts)** | **solution** | **description** | **analysis** |
| anthropogenic climate change  anthropogenic  emission  emissions  carbon emissions  carbon dioxide emissions  CO2 emissions  greenhouse gas  greenhouse gases  greenhouse gasses  greenhouse effect  enhanced greenhouse effect  heat trapping gas  heat trapping gases  heat-trapping gas  heat-trapping gases  methane  coalbed methane  fossil fuel  fossil fuels  power plant  power plants  coal  coal power plant  coal power plants  coal fired power plant  coal fired power plants  coal-fired power plant  coal-fired power plants  oil  crude oil  gas  natural gas  fracking  hydraulic fracturing  keystone  carbon  carbon dioxide  carbon dioxides  CO2  black carbon  carbon footprint  carbon pollution  carbon sink  chlorofluorocarbon  chlorofluorocarbons  enteric fermentation  fluorinated gas  fluorinated gases  fluorocarbon  fluorocarbons  halocarbon  halocarbons  HCFC  HCFCs  HFC  HFCs  hydrochlorofluorocarbon  hydrochlorofluorocarbons  hydrofluorocarbon  hydrofluorocarbons  nitrogen oxide  nitrogen oxides  nitrous oxide  nitrous oxides  NMVOC  NMVOCs  perfluorocarbon  perfluorocarbons  aerosol  aerosols  Keeling Curve  400ppm  400 ppm  Mauna Loa  particulate matter  parts per billion  parts per million  parts per trillion  climate skeptic  climate sceptic  climate denier | climate  climate change  climatechange  climate feedback  climate forcing  thermal radiation  radiative forcing  climate sensitivity  climate shift  climate shifts  climate system  climate systems  climate threshold  climate thresholds  climate variability  climate vulnerability  critical threshold  critical thresholds  global average temperature  global warming  global warming vulnerability  globalwarming  globe has warmed  globe is warming  globe will be warming  vulnerability  anomaly  anomalies  spike  spikes  Flux  Oscillation  Variability  buoy  tipping point  risk  energy balance  energy imbalance  historical high  historical low  upward trend  above normal  large storm  large storms  jet stream  transport heat  albedo  albedo-feedback  record low ice extent  record high temperatures  sea ice  sea ice extent  sea ice area  sea ice dynamics  sea ice thin  sea ice thinning  sea ice retreat  sea ice growth  sea ice dip  unseasonal sea ice decline  sea ice melt  sea ice melting  heat absorbed  sea surface temperature  sea surface temperatures  SST  water temperature  water temperatures  freezing sea ice  re-freezing sea ice  Arctic amplification  reindeer  ice free region  ice free regions  record-low ice coverage  freezing point  ho, ho, hot!  Ho, Ho, Hot!  Climate change heats North Pole  gaining ice  losing ice  ice gain  ice loss  retreat  retreating  mass of ice  vanishing ice  ice vanishing  melting point  glacier melt  ice cap melt  glacial melt  glacier  glacier melt  glaciers  melting glaciers  ice cap  ice cap melting  ice caps  polar amplification  sea ice  freeze-up  heat  heating  heat wave  extreme heat  early winter heat wave  hot  hotter  above average  extreme heat  warming  extra warm  extra warming  warm episode  warm episodes  extreme warmth  extremely warm  extreme warm event  warming trend  fastest-warming  temperature anomaly  extreme temperature  extreme temperatures  temperature increase  temperature increases  large temperature increase  large temperature increases  largest temperature increase  temperature swing  temperature swings  degrees above normal  heat rise and temperatures  freak temperature  freak temperatures  phytoplankton blooming  wildfire  sea level rise  sea level rising  desertification  drought  species extinction  permafrost  invasive species  ocean acidification  climate refugee  climate refugees | alternative energy  alternative sources of energy  alternative power  alternative sources of power  clean energy  clean power  renewable energy  renewable power  renewable sources of energy  renewable sources of power  cleantech  biofuel  biofuels  advanced biofuel  advanced biofuels  cellulosic biofuel  cellulosic biofuels  biodiesel  ethanol  corn ethanol  corn based ethanol  corn-based ethanol  solar  solar energy  solar panel  solar panels  solar power  distributed solar  community solar  wind energy  distributed wind  wind power  wind turbine  wind turbines  cap and trade  carbon trading  carbon tax  carbon credit  carbon credits  carbon offset  carbon offsets  carbon capture  carbon sequestration  emission standards  emissions trading  carbon neutral  carbon neutrality  zero carbon  decarbonize  environmental accounting  climate change resilience  climate change resilience  climate resilience  global warming resilience  climate adaptation  climate change adaptation  global warming adaptation  climate preparedness  climate change preparedness  global warming preparedness  mitigation  mitigate  eco friendly  eco-friendly  energy efficiency  energy efficient  hydropower  recycle  recycling  reforestation  afforestation  Kyoto Protocol  Montreal Protocol | GOES  November-December 2016  CMIP5 multi-model ensemble  weather@home  2013 IPCC AR5 report  -7 ºC  2 ºC  3.6 ºF  19 ºF  15 ºC  27 ºF  13 ºC  23 ºF  10 ºC  18 ºF  Beaufort Sea  Dr. Otto  Dr Otto  Fredi Otto  Friederike Otto  Otto  Cullen  Heidi Cullen  Oldenborgh  Geert Jan van Oldenborgh  Marc Macias-Fauria  Andrew King  Peter Uhe  Sjoukje Philip  Sarah Kew  David Karoly  Jeremy Mathis  Zachary Labe  Arctic Research Program  National Oceanic and Atmospheric Administration  NOAA  Oxford  ECI  Yamal Peninsula  North-Western Siberia  Siberia  22 percent out of 275,000  275,000  AMO  Gaussian  aerosols  decadal North Atlantic variability  North Atlantic variability  35 degrees Fahrenheit  30-35 degrees above normal  23 degrees above normal  Santa  Franz Joseph islands  Svalbard  National Snow and Ice Data Center  NSIDC  Longyearbyen  positive feedback  Weather Underground  40 degrees above normal  Climate Central  World Weather Attribution  WWA  Oxford University  Environmental Change Institute  North Pole Environmental Observatory  AGW  IPCC  Intergovernmental Panel on Climate Change  EPA  Environmental Protection Agency  UNFCCC  National Climate Assessment  NCA | attribution  event attribution  extreme event attribution  climate attribution  weather attribution  extreme weather attribution  world weather attribution  attribution study  climate central  climatecentral  climate matters  climatematters  climate science  climate scientist  science  scientist  climate prediction  climate predictions  climate projection  climate projections  climate scenario  climate scenarios  coupled climate model  coupled climate models  historical simulation  historical simulations  HadAM3P  modulated  forecast  forecasting  event frequency  event likelihood  probability  probabilities  weather model  weather models  historical record  historical records  satellite imagery  satellite image  satellite images  unusual  rare  extreme  extremely  extremely unlikely  extreme event  weather system  weather systems |