

*United Church of Christ, Connecticut Conference*

**Climate Change and Global Warming**

**Frequently Asked Questions:**

**Q. What is the nature of the climate change and global warming today?**

**A. Here is a brief summary given by the American Meteorological Society:**

[\[http://www.ametsoc.org/POLICY/2007climatechange.html\]](http://www.ametsoc.org/POLICY/2007climatechange.html)

“Climate is changing in many ways. Global mean temperatures have been rising steadily over the last 40 years, with the six warmest years since 1860 occurring in the last decade. Regionally, the warming trend is greatest in northern latitudes, over land, and at night. Decreases in Arctic sea ice have been observed. Most studies indicate that ice loss has recently accelerated at the margins of Greenland and the West Antarctic ice sheet, whereas the East Antarctic ice sheet and the Greenland interior appear to be gaining mass.

“In the U.S. most of the observed warming has occurred in the West and in Alaska. However, there are regional variations in the signature of climate change, with warming in the western U.S. but little or no annual temperature change in the southeast U.S. in recent decades. Temperature rises have significant hydrologic effects. Freezing levels are rising in elevation, rain occurs instead of snow at mid-elevations, spring maximum snowpack is decreasing, snowmelt occurs earlier, and the spring runoff that supplies over two-thirds of the western U.S. streamflow is reduced.

”Evidence for warming is also observed in seasonal changes with earlier springs, longer frost-free periods and longer growing seasons, and shifts in natural habitats and in migratory patterns of birds.

”Sea levels are generally rising around the world and glaciers are generally in retreat. A component of sea level rise is attributed to expansion due to a long-term increase in ocean heat content. The impacts of even small rises in sea level on coastal zones are expected to be severe, particularly in conjunction with storm surges associated with vigorous weather systems.”

**Q. Is the present climate change caused by human activity?**

**A. There is an overwhelming consensus among scientific experts that present and projected effects of climate changes are caused primarily by human activity.** This point of view was unequivocally expressed by the United Nation’s Intergovernmental Panel on Climate Change (IPCC) in its most recent report published in 2007 (AR4). This view is shared by the National Academy of Sciences, along with the national science academies of major developed and rapidly developing countries, and a vast majority of leading scientific and research institutions and non-governmental

organizations, including the American Meteorological Society, the American Geophysical Union, and the American Association for the Advancement of Science (AAAS).

[<http://www.nationalacademies.org/onpi/06072005.pdf>]

In May, 2008, the White House's National Science and Technology Council released its long awaited report, ***Scientific Assessment of the Effects of Global Change on the United States***. In the introduction to the report, it makes the following statement:

“Our understanding of climate change continues to grow, enabling scientists to draw increasingly certain conclusions about its causes and impacts. For example, in their most recent assessment of climate change science, the IPCC concluded that it is unequivocal that the average temperature of Earth's surface has warmed recently and it is *very likely* (greater than 90% probability) that most of this global warming is due to increased concentrations of human generated greenhouse gases. ***Several lines of evidence, including those outlined in the following sections, point to a strong human influence on climate.*** Although these individual lines of evidence vary in their degrees of certainty, when considered together they provide a compelling and scientifically sound explanation of the changes to Earth's climate—including changes in surface temperature, ice extent, and sea level rise—observed at global and continental scales over the past few decades.” (bold emphasis added)

[<http://www.climate-science.gov/Library/scientific-assessment/Scientific-AssessmentFINAL.pdf>]

#### **Q. Who is the Intergovernmental Panel on Climate Change?**

**A. The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP).** Through the IPCC, climate experts from around the world review, analyze and synthesize the most recent climate science findings every five to seven years and present their report to the world's political leaders. The IPCC has issued comprehensive assessments in 1990, 1996, 2001 and 2007.

Its ***Fourth Assessment Report (AR4)*** was released in 2007. The preparation of this landmark report involved the contributions of over 2,500 scientific experts, more than 800 contributing authors and over 450 lead authors drawn from some 130 countries.

*IPCC, Climate Change, 2007, Synthesis Report:*

[[http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf)]

In recognition of their extraordinary contributions to global peace and security, the IPCC was awarded the ***Nobel Prize for Peace*** in 2007. In announcing this award, the Norwegian Nobel Committee stated the following:

“Through the scientific reports it has issued over the past two decades, the IPCC has created an ever-broader informed consensus about the connection between human activities and global warming. Thousands of scientists and officials from over one hundred countries have collaborated to achieve greater certainty as to the scale of the warming. Whereas in the 1980s global warming seemed to be merely an interesting hypothesis, the 1990s produced firmer evidence in its support. In the last few years, the connections have become even clearer and the consequences still more apparent.”

[[http://nobelprize.org/nobel\\_prizes/peace/laureates/2007/press.html](http://nobelprize.org/nobel_prizes/peace/laureates/2007/press.html)]

**Q. Is there a well recognized internet source where factually accurate and scientifically reliable information may be obtained on climate change?**

**A. At present, such an internet source is available from the *Encyclopedia of Earth* (EOE), which recently launched its comprehensive on-line “Climate Change Collection” on its website. All articles and entries on the EOE, written by non-anonymous authors, have undergone extensive peer-review before they are posted on the website (unlike those available on the Wikipedia).**

*EOE Climate Change Collection:*

[[http://www.eoearth.org/article/Climate\\_Change\\_%28collection%29](http://www.eoearth.org/article/Climate_Change_%28collection%29)]

On the EOE, an up-to-date summary on current knowledge on climate change is provided by Mohan Munasinghe, IPCC’s Vice-Chair.

[[http://www.eoearth.org/article/Climate\\_change](http://www.eoearth.org/article/Climate_change)]

Note: The EOE, which is a project of the Earth Portal, is sponsored and administered by the *National Council for Science and the Environment* (NCSE). [website: <http://www.ncseonline.org>]

**Q. What are “heat-trapping” greenhouse gases and how are they related to climate change and global warming?**

**A. At present, there are three major components of greenhouse gases in the atmosphere that are responsible for climate change and global warming (listed with their respective percentages of emissions from human-related sources): (a) carbon dioxide (82%, mainly from fossil fuel burning), (b) methane (9%), and (c) nitrous oxides (5%).** While these greenhouse gases freely allow sunlight to enter the earth’s surface, they tend to absorb (or trap) sun’s reflected infra-red (or heat-bearing) radiation in the atmosphere, thus causing climate change and global warming.

In the United States, the chief sources of carbon dioxide emissions from fossil fuel combustion are: (a) petroleum (42%), (b) coal (37%), and (c)

natural gas (21%). While petroleum and natural gas products are mostly consumed in the transportation and manufacturing sector in the United States, coal is the main source of fossil fuel combustion in the production of electricity (81%). For more information, refer to the *Energy Information Administration's* (US Department of Energy) website:

[<http://www.eia.doe.gov/oiaf/1605/ggccebro/chapter1.html>]

**Q. What is a carbon footprint?**

**A. “A carbon footprint is the measure of the amount of greenhouse gases measured in units of carbon dioxide by human activities.** A carbon footprint can be measured for an individual or an organization, and is typically given in tons of CO<sub>2</sub>-equivalent (CO<sub>2</sub>-eq) per year. For example, the average North American generates about **20 tons** of CO<sub>2</sub>-eq each year. The global average carbon footprint is about **4 tons** of CO<sub>2</sub>-eq per year.”

For more detailed information on carbon footprint, refer to EOE article by Maggie Walser, from which the above introductory statement was excerpted.

[[http://www.eoearth.org/article/Carbon\\_footprint](http://www.eoearth.org/article/Carbon_footprint)]

**Q. Is there an urgent need for policy makers to take immediate action in drastically reducing greenhouse gas emissions to avoid the disastrous consequences of climate change and global warming?**

**A. On May 29, 2008, over 1,700 leading scientists and economists in the United States issued a joint statement calling for policy makers to take a leadership role in reducing “heat-trapping” emissions 80% below 2000 levels by 2050.** In making such a recommendation, they voiced the following sense of urgency for enacting far-reaching public policies to stem the “irreversible consequences” of global warming:

[[http://www.ucsusa.org/assets/documents/global\\_warming/Scientist\\_Economists\\_Call\\_to\\_Action\\_fnl.pdf](http://www.ucsusa.org/assets/documents/global_warming/Scientist_Economists_Call_to_Action_fnl.pdf)]

“We call on our nation’s leaders to swiftly establish and implement policies to bring about deep reductions in heat-trapping emissions. The strength of the science on climate change compels us to warn the nation about the growing risk of irreversible consequences as global average temperatures continue to increase over pre-industrial levels (i.e., prior to 1860). As temperatures rise further, the scope and severity of global warming impacts will continue to accelerate... A strong U.S. commitment to reduce emissions is essential to drive international climate progress. Voluntary initiatives to date have proven insufficient. ***We urge U.S. policy makers to put our nation onto a path today to reduce emissions on the order of 80 percent below 2000 levels by 2050. The first step on this path should be reductions on the order of 15-20 percent below 2000 levels by 2020, which is achievable and consistent with sound economic policy.*** There is no time to waste. The most risky thing we can do is nothing.” (emphasis in original)

**Q. Is there any evidence that serious consequences of climate change are being observed in different geographical regions of the United States today?**

**A. There is ample evidence that many regions of the United States at the present time have been significantly impacted by climate change – in lowered agricultural productivity, in reduction of water resources, and in loss of land resources and biodiversity** This is documented comprehensively in a report recently released by the U.S. Climate Change Science Program (lead agency: U.S. Department of Agriculture) entitled, *The Effects of Climate Change on Agriculture, Land Resources, Water Resources and Biodiversity* (May 2008). In its executive summary, the report's overarching conclusion is summarized as follows:  
[\[http://www.usda.gov/oce/global\\_change/files/SAP4\\_3/ExecSummary.pdf\]](http://www.usda.gov/oce/global_change/files/SAP4_3/ExecSummary.pdf)

*“Climate changes – temperature increases, increasing CO2 levels, and altered patterns of precipitation – are already affecting U.S. water resources, agriculture, land resources, and biodiversity (very likely).* The literature reviewed for this assessment documents many examples of changes in these resources that are the direct result of variability and changes in the climate system, even after accounting for other factors. The number and frequency of forest fires and insect outbreaks are increasing in the interior West, the Southwest, and Alaska. Precipitation, streamflow, and stream temperatures are increasing in most of the continental United States. The western United States is experiencing reduced snowpack and earlier peaks in spring runoff. The growth of many crops and weeds is being stimulated. Migration of plant and animal species is changing the composition and structure of arid, polar, aquatic, coastal, and other ecosystems.” (emphasis in original)

**Q. What kinds of cap and trade legislation on carbon dioxide emissions are presently being considered?**

**A. There are several cap and trade legislations pending before the current session of the US Congress. They all set an economy-wide regulatory cap on carbon emissions, while providing industries flexibility to either reduce emissions or to trade for allowable carbon permits from other emitters to meet compliance.**

For a summary of the different cap and trade legislations before the US Congress, please refer to the following internet link:

[\[http://www.pewclimate.org/docUploads/110-Congress-Cap-Trade-01-30-2008.pdf\]](http://www.pewclimate.org/docUploads/110-Congress-Cap-Trade-01-30-2008.pdf)

**Q. What other legislative approaches have been proposed to address the problem of climate change and global warming?**

**A. These legislative initiatives include: (a) enacting stringent gas mileage standards, (b) imposing emissions tax on carbon dioxide emitters, (c) providing financial incentives for investment in alternative and renewable sources of energy, (d) increasing research and development funds for new energy efficient and non-polluting technologies.**

For an overview of current federal and state legislative and regulatory programs and initiatives, refer to presentations by policy analysts and decision makers given at a *Workshop on Innovative Approaches to Climate Change* convened by the Pew Center on Global Climate Change on February 26-27, 2008.

[\[http://www.pewclimate.org/statefed08\]](http://www.pewclimate.org/statefed08)

**Q. What is the current focus and timeline of global negotiations on climate change?**

**A. The main focus of current international negotiations on climate change occurs within the *UN Framework Convention on Climate Change* (UNFCCC) approved at the Rio Earth Summit in 1992, which ultimately led to the adoption of the landmark *Kyoto Protocol* in 1997. At present, 178 countries have signed and ratified the Kyoto Protocol, with the conspicuous absence of the United States:**

[\[http://en.wikipedia.org/wiki/List\\_of\\_Kyoto\\_Protocol\\_signatories\]](http://en.wikipedia.org/wiki/List_of_Kyoto_Protocol_signatories)

As part of developing revisions to post-Kyoto agreement by the signatories, there will be a meeting of the Conference of Parties (COP 14) in December, 2008 in Poznan, Poland, followed by two COP 15 meetings in June and in December, 2009. For more details, refer to UNFCCC's website:

[\[http://unfccc.int/2860.php\]](http://unfccc.int/2860.php)

**Q. Is there an informational resource for members of church congregations to become more informed about consequences of climate change in carrying out their outreach activities in global ministries?**

**A. The Eco-Justice program of the National Council of Churches has published a white paper, "Climate and Church: How Global Climate Change Will Impact Core Church Ministries". This report outlines how church ministries and outreach programs around the world will be affected by the consequences of climate change, including refugee resettlement, food security and disaster relief.**

[\[http://www.nccecojustice.org/network/downloads/ClimateWhitePaper\\_finalREV.pdf\]](http://www.nccecojustice.org/network/downloads/ClimateWhitePaper_finalREV.pdf)

For a *United Church of Christ's (UCC) perspective* on this general topic, please refer to a report issued by the Energy and Climate Work Group – an arm of UCC's Environment and Energy Task Force – that was submitted to the 26<sup>th</sup> General Synod held in Hartford, Connecticut in June 2007:

[\[http://www.ucccoaction.org/EnergyWGreport.pdf\]](http://www.ucccoaction.org/EnergyWGreport.pdf)

**Q. Are there practical informational resources available for individuals and church congregations to become more “green” and to take steps in reducing their carbon footprint?**

**A. There are a number of such resources currently available that are both technically reliable and practical in scope – from government agencies, NGOs and church organizations.**

Some of these informational resources are listed below:

US Environmental Protection Agency – personal emissions calculator:

[[http://www.epa.gov/climatechange/emissions/ind\\_calculator.html](http://www.epa.gov/climatechange/emissions/ind_calculator.html)]

State of California – Climate Change Portal:

[<http://www.climatechange.ca.gov/>]

The Nature Conservancy – carbon footprint calculator:

[<http://www.nature.org/initiatives/climatechange/calculator/>]

The Regeneration Project – Interfaith Power and Light program:

[<http://www.theregenerationproject.org/About.htm>]

Connecticut Interfaith Power and Light – main website:

[<http://ctipl.org/>]

Unitarian Universalist Associations of Churches – global warming/climate change, statement of conscience:

[[http://uusofdavis.org/information/GS/\\_GA%20SOC%20Global%20Warmin g.pdf](http://uusofdavis.org/information/GS/_GA%20SOC%20Global%20Warmin g.pdf)]

Unitarian Universalist Church of Davis – on becoming a green sanctuary:

[[http://uusofdavis.org/information/GS/gsl\\_main.html](http://uusofdavis.org/information/GS/gsl_main.html)]

St. Albans Church, Copenhagen, Denmark – 10 ways to reduce your carbon footprint:

[<http://www.st-albans.dk/green-church/10-ways-to-reduce-your-carbon-footprint-and-save-money/>]