

Number 2

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GLOBAL WARMING IS NO MORE

Climate scientists have been warning of possible abrupt climate change for over a decade. They have been saying that our planet has experienced many abrupt changes in the past and that these changes repeat themselves. They have also been warning us that we are living in an uncommonly serene climate period on our Earth. The paleoclimate record shows that this period, this geologic era that we are in, the Anthropocene, is the single most calm climate period recorded in the last 2 to 3 million years.

CLIMATE IS LIKE A DRUNK

The paleoclimate record goes on to show that abrupt changes are the norm. Our climate does not change as we were once taught. There really is no glacially paced movement from warm times to ice ages; instead, the changes take place very rapidly. Ice core climatologist Richard Alley at Penn State said in his book about ice cores *The Two Mile Time Machine* "...Climate is like a drunk. When left alone, it sits; when forced to move, it staggers."

The disappearance of Arctic sea ice is just the first major reaction in what will become widely known as an abrupt climate change. Our climate is staggering, not collapsing, just staggering.

PALEOCLIMATE

Paleoclimate refers to climate that happened a long time ago. We must use other methods besides the thermometer to tell us what the climate was tens of thousands of years ago. Our science guys and girls have developed very intricate and accurate methods of determining rainfall, temperature, storminess. windiness, ice coverage and many other chemical related indicators of climate. They do this by looking at traces of chemical elements that were deposited by ancient atmosphere. Different our climates deposited different elements. These clues were preserved in things like ice, sediments, fossilized corals and cave formations and are the basis for the study of paleoclimate.

Top News Item

NASA Finds Greenland Snow Melt Hitting Record High in High Places "A new NASA-supported study reports that 2007 marked an overall rise in the melting trend over the entire Greenland ice sheet and, remarkably, melting in highaltitude areas was greater than ever at 150 percent more than average. In fact, the amount of snow that has melted this year over Greenland could cover the surface size of the U.S. more than twice."

Marco Tedesko of the Joint Center for Earth Systems Technology (NASA University of Maryland) found that in high altitude areas over 1.2 miles above sea level, the melt occurred 25-30 days longer this year than the observed average in the previous 19 years. This places 2007 in fifth place for the highest melting index after 2005, 2002, 1998 and 2004, in that order. The 11 highest melt years in Greenland have occurred in the last 11 years.

WHY TRANSPORTATION PLANNING?

Transportation represents one third of total US greenhouse gas emissions. These emissions have grown 29% since 1990, averaging about 2% per year. Automobiles and light trucks represent 60% of this figure. (Source: Inventory of US Greenhouse Gas Emissions and Sinks: 1990 – 2004, US EPA, 2006)

The US generates 7% of the world's annual CO2 emissions, and our individual automobiles and light trucks account for 4.2% of the worlds carbon dioxide emissions. Doesn't sound like much? To put this 4.2% into perspective, the average global temperature difference between the depths of the ice ages and our current interglacial warmth is about 10° F. Our planet has warmed 1.2° in the last 35 years. The abrupt climate change that is beginning now is another indicator that the IPCC forecast of 2° to 5° warming in the coming century could be conservative.





A sub-glacial melt river exits the face of the Greenland Ice Cap, Kangerlussuaq, Greenland 2007. Greenland has only 88 miles of roads outside of established settlements. Increased melt causes the edge of the ice cap to be even more dirty than usual.

TRANSPORTATION ISSUES

The National Center for Smart Growth Research and Education (NCSG) at the University of Maryland promotes a smart growth approach to limiting sprawl and vehicle miles traveled by individuals. Smart growth incorporates many aspects of efficient community design including nodal type concepts such as clustering, small lot size, mixed use development and land use regulations discouraging sprawl from frontage road development.

In the U.S. Department of Roads Public Highways Magazine is an article entitled <u>THE GENIE IN THE BOTTLE: The Interstate System and Urban Problems</u>. It states:

- Urban freeways (the report says) would exert "a powerful force tending to shape the future development of the city," but only if they are planned "to promote a desirable urban development."
- "Because metropolitan areas consisted of several political jurisdictions ... an overall authority (must) be created to cooperate with the state highway agency in developing an overall thoroughfare plan."
- "Sporadic urban expansion left largely to the operations of the subdivider creates ribbon developments along the transportation corridors, with large undeveloped interstices between them, greatly increasing the cost and difficulties of providing essential public facilities and services."

The complete title of this article includes the years 1939 – 1957 at the end of the title. The report referenced was called Interregional Highways and was written by Thomas McDonald and Hubert Fairbank in 1941. It reflected the expressway philosophy of the German Autobahn, which includes no frontage roads. It is amazing the relevance today of the thoughts on urban freeways from 50 years ago.

Texas Department of Transportation Frontage Road Policy

Texas Transportation Commission Minute Order 108731, passed December 13, 2001 repeatedly states that "... it is the intent of the department not to construct frontage roads." TxDOT Report FHWA/TX-04/5-1873-01-1, Freeway Design Decision for Revised Frontage Road Policy clearly states that the reasons for Minute Order 108731 are economics, safety, and communities oriented towards more efficient and productive а transportation system.

TxDOT, on paper, supports appropriate climate stewardship. In real life, they almost never build freeways without frontage roads.

Leadership Growth Planning

There is a good discussion of land use and impacts on climate in the book *Growing Cooler: The evidence on Urban Development and Climate Change*, published by The Urban Land Institute, 2007, and supported by Smart Growth America, the Center for Clean Air Policy and the National Center for Smart Growth Research and Education. Here are a few quotes:

"The U.S. transportation sector cannot do its fair share to meet this target (Kyoto protocol CO2 reduction) through vehicle and fuel technology alone. We have to find a way to sharply reduce the growth in vehicle miles driven across the nation's sprawling urban areas, reversing trends that go back decades. The U.S. Department of Energy's Energy Information Administration (EIA) forecasts that driving will increase 59 percent between 2005 and 2030, outpacing the projected 23 percent increase in population. The EIA also forecasts a fleetwide fuel economy improvement of 12 percent within this time frame, primarily as a result of new federal fuel economy standards for light trucks Despite this improvement in efficiency, CO2 emissions would grow by 41 percent."

This book states that shifting 60 percent of new growth to smart growth would save 85 million metric tons of CO2 annually by 2030. This equals a 28 percent increase in federal vehicle efficiency standards by 2020 (13 years, not 23 years). This bit of magic would be the same as if the combined fuel efficiency of all new cars rose to 32 mpg by the year 2020. This increase in efficiency comes solely from using community planning tools together with transportation system design techniques.

Smart growth, in the form of nodal type development encouraged by freeways without frontage roads, minimizes trips and minimizes vehicle miles traveled saving millions of tons of CO2.