A TECTONIC FORCING FUNCTION FOR CLIMATE MODELING

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Scientists have long sought a forcing function to account for the variability of climatic trends such as El Nino. To date models coupling only ocean/atmosphere interaction have not adequately accounted for changes in climatic trends. The World Climate Research Program's initiative on Stratospheric Processes and their Role in Climate (SPARC) currently indicates the importance of parameterizing gravity wave effects in numerical climate simulation models. Using radiosonde data, prominent eastward propagating stratospheric gravity waves around the equator were first identified by Yanai et al., 1968. The dominant source of these stratospheric gravity waves is thought to originate in the upper troposphere from convection processes due to the high heat budgets near the equator. A potentially overlooked source for fluctuations of gravity waves could be attributed to coupling influences of the earth's interior controlled through tectonic trends. The coupling of tectonic dynamics with ocean/atmosphere dynamics through gravitational control on atmospheric pressure is proposed. The proposal may be confirmed with a simple experiment and uses the following assumptions: (1) Oscillations or expansion/contraction of the earth generates tectonic fronts that migrate slowly eastward due to earth rotation and alter existing gravitational waves produced through tropospheric convection; (2) These tectonic fronts produce relatively quick changes in tectonic flow rates and direction along tectonic trends with enough mass to produce fluctuations in the gravitational field and; (3) These regional fluctuations in the gravitational field affect local atmospheric pressure through tectonic eddy or vortex structures associated with island arcs and offsets along mid-ocean ridges, rift zones, and mountain fold belts. Using these assumptions, a tectonic forcing function on climate control can be illustrated with GEOSAT data, which greatly enhances the capacity of global climate models to monitor and predict long-range climatic trends. The phenomena can best be illustrated in the Pacific Basin with tectonic dynamics inferred from the tectonic fabric between the Indonesian Island Arc and the offset or vortex along the East Pacific Rise near Easter Island. This gravitationally teleconnected relationship between tectonic structures has been measured and defined since 1924 as the Southern Oscillation Index (SOI). The eastward migration of tectonic fronts is the reason increased vorticity of the phenomena moved to the Atlantic in 1995 after it peaked at the end of 1994 in the east Pacific. The best experiment to test this hypothesis would be a global array of absolute gravity meters and barometers placed in the most intense tectonic vortex structures. Changes in absolute gravity measurements should correlate with absolute atmospheric pressure changes and form the basis of a new climatic model which accounts for tectonic frontal surges.