Making Animations of the Sky

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1. Outline:

I take photographs of sky every 6 seconds during the year 2006, automatically. In order to see the continuous change of the sky, the data was converted from picture data to animation data.

2. Purpose:

Meteorological phenomena have several features: very long scale in time, very large scale in space, poor reproducibility. These might be difficulties when teaching meteorological phenomena in school. In this research, photographs of sky were taken continuously every 6 seconds, and data conversion was performed so that it could be continuously reproduced as an animation. The purpose of this research to making animations of the following phenomena and to make use of them for education.

∗Clouds movement, generation, disappearance, etc.

∗Phenomena associated with synoptic scale turbulence, such as cold front, warm front, typhoon, etc.

∗Optical phenomena, such as mock-sun, morning glow, evening glow, Tyndall phenomenon, rainbow, etc.

∗Dynamical phenomena, such as Kelvin-Helmholtz Instability

3. Method:

A network camera is set up so that a photograph is taken periodically and the picture files are transfered to a server computer. Because of irregular response to sun light, I made a program which sends a reset signal to the camera from the server computer. The accumulated picture files are converted to animation files and those were uploaded to a web page.

4. Status and Future works:

The animations for the whole 2006 year was completed. I am now extracting the characteristic phenomena. So far, I have found that the camera has captured several interesting phenomena, such as KH instability, a morning glow, evening glow, mock-sun, growth of cumulonimbus etc. I am now planning to make use of these animations for a class in elementary school, and the results will be reported.