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Yellow Dragon, Green Belt and Alternative Ecosystem States

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Abstract

This note briefly discusses different aspects of dust storm and issues surrounding the Green Belt Eco-Strip National Program (GBESNP) initiated by the Government of Mongolia in March 2005. Increases in dust storm intensity and magnitude might be an indicator for deteriorating ecosystem states. If there is such an increase, it is only a consequence of unsustainable resource use by humans, including proximately the overgrazing, mining, agriculture and deforestation and ultimately climate change. Additionally, the effects of dust storms are not all bad, but there are other aspects of it that should be considered when one wants to address the issue. Apparently, dust storms play an important role in global circulation of nutrient and minerals as they have always been. Thus they do have positive effects in ecosystem states elsewhere on Earth. It seems however these other effects of dust storms are largely ignored. The note also points out some of the important theoretical and practical aspects that need to be seriously considered before taking on such a large scale environmental engineering effort as GBESNP. If dust storm is increasing in frequency and magnitude, it is crucial to pinpoint causative factors and implement efforts aimed at improving and enforcing laws and regulations on those causative environmental practices. Acting before thinking is not the smartest habit and we have reasons to believe that implementing the GBESNP (with its name basically copied from elsewhere) without good plan and management is not a solution, but it may even add to the problem. Therefore, we urge environmental managers and scientists, especially policy-makers to seriously weigh the pros and cons of the project. If policy-makers seek a short-term public relations benefit from a largely uninformed general public, it is the scientists' obligation to intervene.

Key words: Green Belt Eco-Strip National Program Project, dust storm, iron hypothesis, cause and consequence, alternative stable states, Environmental Impact Assessment,

The fifth season or yellow dragon, is it all bad?

Each spring, soil particles from the Gobi Desert, which spans over Mongolian and Chinese political boundaries are swept up by a cold air mass called the Siberian High into the atmosphere and blasts into south east China, Korea, and Japan, sometimes even reaching to islands in the Pacific Ocean and west coast of North America (Wright, 2005). On rare occasions, it can go even further. The 1998 dust storm moved as far as over the continental US to eventually move off the East Coast into the Atlantic. The Koreans call this phenomenon the "Fifth Season" (or "Yellow Sand") and the Chinese call it "Yellow Dragon" (Ratliff, 2003). Although coarse sediment materials such as sand particles soon fall out, finer silts and clays can ascend to 5,000 m and travel thousands of kilometers. At its peak, the dust storm assaults cities and rural areas not only causing safety issues (decline of visibility), but also health concerns (a major peak in number of patients suffering from respiratory ailments and potentially infectious disease agents and polluters carried with it; Vedal, 1997; Nel, 2005; Pelletier, 2006), and environmental problems (pollutions, soil erosion, desertification etc.). The dust storm also creates major economic and social problems as it shuts down airport operations, damages or destroys crops to impoverish residents and clogs fine machinery (Ratliff, 2003; Wright, 2005). As such, it is declared as a natural disaster in Korea. Overgrazing, deforestation, mining and drought are to blame as these proximate factors cause the upper layer of the soil to become mobile so they can be easily picked up by the wind. The Central Asian Gobi desert expands at a rate of some 2,500 square kilometers per year, according to some sources (Ratliff, 2003).