



NATIONAL ECOLOGICAL OBSERVATORY NETWORK

IMPORTANT ECOLOGICAL QUESTIONS CONFRONT THE US

Will the northern snakehead spread across the US and harm sport fish populations?

Can the spread of infectious agents like West Nile or Hanta virus be monitored and predicted?

Do western wildfires affect water quality in the central or eastern US?

Answering regional or national questions like these has been impossible because we lacked the technology, scientific instruments and facilities needed to collect and synthesize the required complex information.

Over the last 20 years, the **NSF Long-Term Ecological Research Program** demonstrated the value of addressing ecological questions across a network of sites and identified the need for a new generation of instruments and facilities for regional and continental scale studies.

Two recent reports from the National Academy of Sciences (*Grand Challenges in Environmental Sciences (2000)* and *Global Environmental Change Research: Pathways for the Next Decade (1999)*) and the PCAST Report: *Teaming with Life (1998)* identified the need for environmental observing systems to address regional or continental scale questions like these. Using recommendations from these and other reports, eight workshops in 1999-2002 created the blueprint for a national ecological observatory network, or **NEON**.

Description

NEON will be a network of networks, a system of environmental research facilities and state of the art instrumentation for studying the environment. Each node in **NEON** will be a regional observatory, comprised of a core site and associated sites that are linked via cyberinfrastructure. These observatories will be geographically distributed based on the US Forest Service defined ecoregions of the US. Observatories will be selected through an open merit review process.

Purpose

NEON will enable integrative research on the nature and pace of biological change at local, regional and continental scales.

Neon's advanced technologies and continental scale connectivity will be used to measure all factors that affect the structure and function of ecosystems, for example the power of genomics will be applied to predicting how the spread of invasive species will affect native biodiversity.

New environmental technologies like wireless sensor arrays and real-time nanoscale analytical field instruments will be developed, tested and deployed at **NEON**.

Users

Biological, physical, and social scientists and engineers will use **NEON** to achieve a better understanding of our nation's environment as they collect, integrate and synthesize data across space and time.

Kindergarten through post-graduate students and teachers will use **NEON** information for educational activities and **NEON** facilities for research.

Local, state and national decision makers will use **NEON** to inform planning and policy decisions.

The American public will use **NEON** to get up-to-date information about environmental issues of interest to them.

Initial Investment

\$12M in 2003 will start construction of the first two **NEON** observatories.

\$12M in 2004 and \$16M in 2005 will complete construction.

Goal

Seventeen **NEON** observatories, the number based on the number of US ecoregions plus an observatory for Antarctica, established over a 7-year period are required for a fully functional **NEON**.

Construction cost for each **NEON** observatory is estimated at \$20 M annually adjusted for inflation.