Peer Review Plan

(Reference Information Quality Act)

FS-1400-0003 (V.1.1) 3/12

☒ Influential Scientific Information ☐ Highly Influential Scientific Assessment

Agency
Forest Service, Northern Research Station

Principle Investigator
Dr. Yude Pan

Title of Study
The Structure, Distribution and Biomass of the World's Forests

Field of Study
Ecology

Type of Review

☐ Panel Review

☐ Individual Review

☒ Alternative Process (Briefly Explain):
Individual scientific reviewers selected by authors, plus technical review performed by the journal.

Estimate Date for Completion
04/15/2013

Number of Reviewers
☐ 3 or fewer ☒ 4 to 10 ☐ More than 10

Primary Discipline/Types of Expertise needed for Review
Biogeographic gradients, landscape-scale diversity, forest productivity and mortality, carbon stock and budget, forest inventory, remote sensing, global environmental change

Reviewer Names and Affiliations
David Hollinger, Louis Iverson, and Erik Lilleskov, U.S. Forest Service
Technical reviewers selected by the Journal

Expected Publication Outlet (Science or similar Peer Reviewed Journal)
Annual Review of Ecology, Evolution, and Systematics

Reviewers Selected by: ☒ Agency ☐ Designated Outside Organizatio

Organization's Name: Journal selects technical reviews

Opportunities for Public Comment? ☐ Yes ☒ No

If yes, briefly state how and when these opportunities will be provided:

How:

When:

Peer Reviewers Provided with Public Comments	☐ Yes	☒ No
Public Nominations Requested for Review Panel	☐ Yes	☒ No

Other Comments

Abstract
Forests are the dominant terrestrial ecosystem on Earth. We review the environmental factors controlling their structure and distribution globally, and evaluate their current and future trajectory. Adaptations of trees to climate and resource gradients, coupled with disturbances and forest dynamics, create complex geographical patterns in forest assemblages and structures. These patterns are increasingly discernible through new satellite and airborne observation systems, improved forest inventories, and global ecosystem models. Forest biomass has emerged as a complex property affected by forest distribution, structure, and ecological processes, including productivity and mortality dynamics. Since at least 1990, there have been consistent increases in biomass density in global established forests, despite increasing mortality in some regions. This trend suggests that a global driver such as elevated CO2 may be enhancing biomass gains. Global forests have also apparently become more dynamic. Advanced remote sensing technologies, an expanding measurement base, and improved ecosystem modeling provide critical ecological insights and support for enhancing forest conservation and ecosystem services.