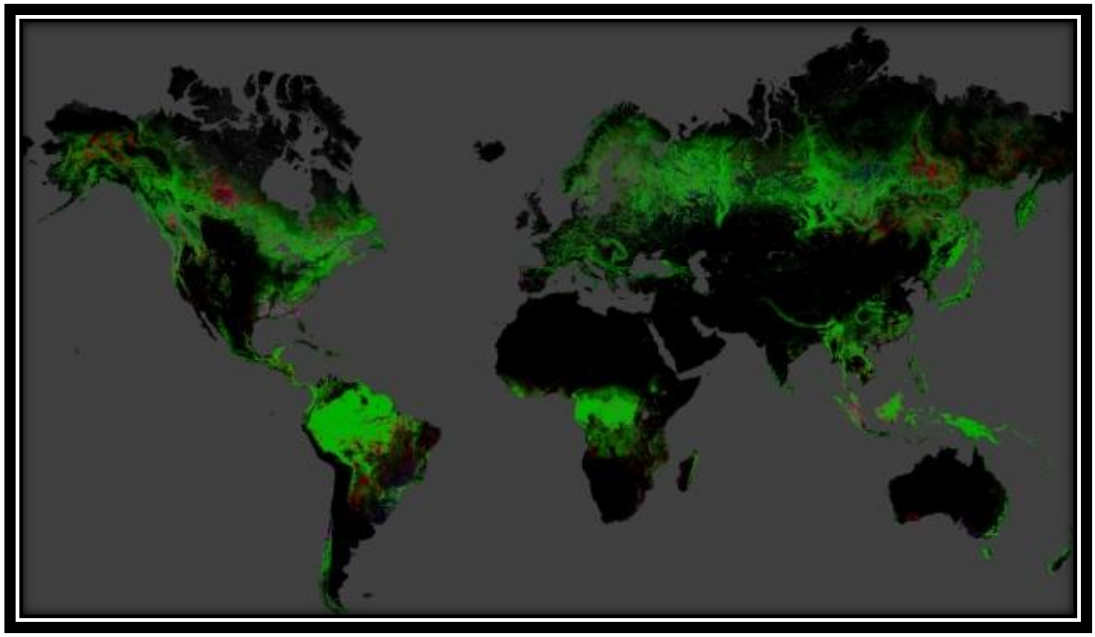
‘3 Trillion Trees on Earth’ – Reveals global tree density mapping

More than 3 trillion trees exist on Earth- reveals a new global study based on satellite imagery, forest inventories and supercomputer technologies. However since the beginning of human civilization, the total number of trees has drastically reduced to 46% approximately, the study says. The data will form a strong source of information to researchers about the forest ecosystem structure in several regions. This in turn can aid in predicting carbon storage capacity and biodiversity richness across the world.

A team of researchers representing various countries has released a first spatially continuous map of forest tree density worldwide, in which, tree populations are mapped at the square-kilometre level. This achievement is made possible by using several concrete approaches such as satellite imagery, forest inventories, and supercomputer technologies. Dr Crowther, a postdoctoral fellow at Yale School of Forestry and Environmental Studies co-ordinated the study and the results are published in the journal *Nature.* Researchers indicate that the new insights can improve the modelling of many large-scale systems, from carbon cycling and climate change models to the distribution of animal and plant species.

"The services offered by trees are plenty and interestingly their actual estimate is not known exactly. Trees are among the most prominent and critical organisms on Earth, yet we are only recently beginning to comprehend their global extent and distribution," said Thomas Crowther, lead author of the study. The study was inspired by a request by Plant for the Planet, a global youth initiative that leads the United Nations Environment Programme's "Billion Tree Campaign." Two years ago the group approached Crowther asking for baseline estimates of tree numbers at regional and global scales so they could better evaluate the contribution of their efforts and set targets for future tree-planting initiatives.



(Image courtesy: ctvnews.ca)

Earlier global estimate predicted just over 400 billion trees worldwide or about 61 trees for every person on the Earth. That prediction was generated using satellite imagery and estimates of forest area, but did not incorporate any information from the ground. It would be interesting to know that there are 3.04 trillion trees -- roughly 422 trees per person. Crowther and his colleagues collected tree density information from more than 400,000 forest plots around the world. This included information from several national forest inventories and peer-reviewed studies, each of which included tree counts that had been verified at the ground level. Using satellite imagery, they were then able to assess how the number of trees in each of those plots is related to local characteristics such as climate, topography, vegetation, soil condition, and human impacts. "The diverse array of data available today allowed us to build predictive models to estimate the number of trees at each location around the globe," said Yale postdoctoral student Henry Glick, second author of the study.

The tree mapping arrived has the potential to inform scientists about the structure of forest ecosystems in different regions, and it can be used to improve predictions about carbon storage and biodiversity around the world. The highest densities of trees were found in the boreal forests in the sub-arctic regions of Russia, Scandinavia, and North America. But the largest forest areas, by far, are in the tropics, which are home to about 43 percent of the world's trees. (Only 24 percent are in the dense boreal regions, while another 22 percent exist in temperate zones.)

This study clearly demonstrates that how tree density changes within forest types. It also helps in predicting how much more effort is needed if we are to restore healthy forests worldwide. Researchers found that climate can help predict tree density in most biomes. In wetter areas, for instance, more trees are able to grow. However, the positive effects of moisture were reversed in some regions because humans typically prefer the moist, productive areas for agriculture.

Source:

http://www.sciencedaily.com/releases/2015/09/150902134941.htm