

The current condition, development and functioning of ecosystems is greatly influenced by the ongoing global change, which is probably caused by the increased concentrations of greenhouse gases in the atmosphere originating from human activity. Ecosystems are able to some extent cope with the consequences of global change on their own, and therefore ensure their future preservation.

To understand the forces driving global change, we need detailed quality data from long-term observation. Quantification of substance and energy flows in different ecosystems and ecosystem valuation ability to bind air carbon allows us to model their development, both in current conditions and under conditions of global change.

This thesis presents the current research methods of atmospheric boundary layer flows, while highlighting their advantages and pointing out their drawbacks. It also enables a better understanding of new methods of observation through the tall towers. The thesis presents some of the existing tall towers and describes their ways and methods of measurement. A part of the thesis is devoted to a tall tower which is planned to be built in the Czech Republic between municipalities Košetice and Křešín u Pacova. It provides an overview of methods, instrumental and technical equipment and facilities of the new tall tower and introduces the purpose of its construction and expected goals of its operation. The theoretical part supports the practical part which analyzes the wind conditions in the area of planned construction of the tall tower.