Glossary

Adaptive capacity. The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences (IPCC 2001b).

Adaptive management. A systematic approach for improving resource management by learning from management outcomes. In principle, its purpose is to enable natural resource managers and other relevant decision-makers deal with uncertainty about future conditions by supporting the development of conservation projects based on information available and then providing the flexibility to modify their management activities to improve their effectiveness as new information becomes available (Williams et al. 2007).

Carbon dioxide equivalent (CO_2-eq). The concentration of carbon dioxide that would cause the same amount of radiative forcing as a given mixture of carbon dioxide and other greenhouse gases. In the IPCC reports, CO_2-eq includes the six greenhouse gases specified in the Kyoto Protocol (IPCC 2007b).

Climate. "Average weather" patterns or trends for a particular region over a period of many years. (NCAR 2004).

Climate change. Climate change refers to a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC 2007b).

Climate change adaptation. Climate change adaptation for natural systems is a management strategy that involves identifying, preparing for, and responding to expected climate changes in order to promote ecological resilience, maintain ecological function, and provide the necessary elements to support biodiversity and sustainable ecosystem services (Glick et al. 2009).

Climate model. A numerical representation of the climate system based on the physical, chemical, and biological properties of its components, their interactions and feedback processes, and accounting for all or some of its known properties (IPCC 2007a). The climate system can be represented by models of varying complexity.

Confidence. A level of "confidence" can be used to characterize uncertainty that is based on expert judgment as to the correctness of a model, an analysis, or a statement. Standard terminology by the IPCC puts "very high confidence" at "at least 9 out of 10 chance of being correct, and "very low confidence" at "less than 1 out of 10 chance" (IPCC 2005).

Downscaling. A method that derives local- to regional-scale (10 to 100 kilometers) information from larger-scale models or data analyses. In statistical downscaling, a statistical relationship is derived between observed local climate variables and predictors at the scale of

global climate model output. Dynamical downscaling, or regional climate modeling, explicitly simulates the process-based physical dynamics of the regional climate system using a high-resolution, limited-area climate model (IPCC 2007b).

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Ecological thresholds. An ecological threshold is the point at which there is an abrupt change in an ecosystem quality, property, or phenomenon, or where small changes in an environmental driver produce large responses in the ecosystem (Groffman et al. 2006).

Exposure. The nature and degree to which a system is exposed to significant climate variations (IPCC 2001b).

Forcing mechanisms. Anything that changes the energy balance of the earth's system, leading to a net change in the earth's average temperature. Examples include regular variations in the earth's orbit, changes in ocean circulation, volcanic eruptions, and changes in the composition of the earth's atmosphere (IPCC 2007a).

Global climate model. Global climate models are large, three-dimensional coupled models that incorporate the latest understanding of the physical processes at work in the atmosphere, oceans, and earth's surface. They range from lower-level General Circulation Models (GCMs) to coupled Atmosphere–Ocean General Circulation Models (AOGCMs) (IPCC 2007b).

Greenhouse gas. Greenhouse gases are the gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the earth's surface, the atmosphere itself, and by clouds. The primary greenhouse gases include water vapor (H2O), carbon dioxide (CO_2), nitrous oxide (N2O), methane (CH4), ozone (O3), although the Kyoto Protocol also addresses several entirely human-made greenhouse gases, including sulfur

hexafluoride (SF6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs) (IPCC 2007a).

Phenology. Recurring plant and animal life cycle events, such as flowering, leafing, or migration.

Refugia. Physical environments that are less affected by climate change than other areas (e.g., due to local currents, geographic location, etc.) and are thus a "refuge" from climate change for organisms (U.S. CCSP 2008b).

Resilience. The amount of change or disturbance that can be absorbed by a system [e.g., an organism, population, community, or ecosystem] before the system is redefined by a different set of processes and structures (i.e., the ecosystem recovers from the change or disturbance without a major phase shift) (U.S. CCSP 2008b).

Resistance. The ability of an organism, population, community, or ecosystem to withstand a change or disturbance without significant loss of structure or function. From a management perspective, resistance includes both (1) the concept of taking advantage of/boosting the inherent (biological) degree to which species are able to resist change and (2) manipulation of the physical environment to counteract/resist physical/biological change (U.S. CCSP 2008b).

Risk assessment. A risk assessment is the process of identifying the magnitude or consequences of an adverse event or impact occurring as well as the probability that it will occur (Jones 2001).

Sensitivity. Sensitivity is the degree to which a system is affected, either adversely or beneficially, by climate-related stimuli (U.S. CCSP 2008b).

Uncertainty. An expression of the degree to which a value (e.g., the future state of the climate system) is unknown. Uncertainty can result from lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from quantifiable errors in the data to ambiguously defined concepts or terminology, or uncertain projections of human behavior. Uncertainty can therefore be represented by quantitative measures, for example, a range of values calculated by various models, or by qualitative statements, for example, reflecting the judgment of a team of experts (see Moss and Schneider 2000; Manning et al. 2010; IPCC 2007b).

Vulnerability. The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. It is a function of the sensitivity of a particular system to climate changes, its exposure to those changes, and its capacity to adapt to those changes (IPCC 2007a).

Vulnerability assessment. A key tool for carrying out adaptation planning, and informing the development and implementation of climate-smart resource management practices.

Weather. Weather is the mix of events that happen each day in our atmosphere, including temperature, rainfall, and humidity.