

**20 CHALLENGE 1**

**PAST GLOBAL CHANGES: A CONTEXT  
TO THE ANTHROPOCENE**

**Challenge Coordinators** Ana Moreno and Santiago Giralt

**48 CHALLENGE 2**

**CLIMATE CHANGE PROCESSES, MECHANISMS  
AND FUTURE SCENARIOS**

**Challenge Coordinators** Sergio M. Vicente-Serrano and David Barriopedro

**74 CHALLENGE 3**

**PRESERVING BIODIVERSITY AND ITS FUNCTIONS  
UNDER GLOBAL CHANGE**

**Challenge Coordinator** Paola Laiolo

**102 CHALLENGE 4**

**GLOBAL CHANGE AT THE POLAR REGIONS**

**Challenge Coordinators** Andrés Barbosa and Santiago Giralt

**130 CHALLENGE 5**

**IMPACT OF GLOBAL CHANGE ON MANAGED ECOSYSTEMS**

**Challenge Coordinator** Victor M. Castillo

**152 CHALLENGE 6**

**HEALTHY PLANET: HAZARDS, RISK MANAGEMENT  
AND SOLUTIONS-ORIENTED RESEARCH**

**Challenge Coordinators** Emilio O Casamayor and Fernando Valladares