Mathematical models are enabling advances in increasingly complex areas of engineering and technology. Recent developments in multiscale geometrical modeling have opened the way to progress in modeling such complex systems as the human circulatory system and the climate system. Professor Quarteroni leads a team which has harnessed mathematical modeling to design improved cardiac surgical interventions and to optimize the design of the twice winning America’s cup yacht Alinghi. He will talk about this work, and their efforts to confront some of the great environmental challenges that face us.