Preface

Engineering Turbulence Modelling, Simulation and Measurements

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This Special Issue contains substantially extended and revised versions of 20 papers, selected from a total of 160 papers presented at the three-day Symposium “**Engineering Turbulence Modelling and Measurements-11**” (**ETMM-11**), held in Palermo, Sicily, in September 2016, under the auspices of ERCOFTAC. The ETMM series of events was established to give greater prominence and sharper profile to research on application-oriented aspects of turbulence and its computational and experimental characterisation, thus helping to bridge the gap between fundamental approaches to turbulence and the exploitation of models, numerical-solution codes and knowledge in an industrial setting. In this respect, ETMM is thematically closely consonant with the aims and ethos of **Flow, Turbulence and Combustion** (FTaC).

Within the broad spectrum of topics featuring at ETMM meetings, the majority deal with computational and experimental approaches to complex aero- and hydro-dynamic flows, multi-phase and reacting flows, flow control, flows in power generation and environmental fluid mechanics. The present Special Issue aspires to reflect this mix and to provide an archival record of some of the best papers presented at ETMM-11. To this end, selected papers were subjected to the same rigorous review process as that followed in respect of any other contribution to FTaC, each manuscript being reviewed, in most cases, by three expert referees, with some manuscripts undergoing two revisions before being accepted.

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The 20 papers included in this Special Issue report mostly computational research that falls, broadly, under six major headings:

- **turbulent boundary layer**—ranging from DNS to resolve the effects of pressure gradients, to the formulation of a VLES-based model to describe the effects of roughness;
- **flow control**—including drag reduction by means of spanwise wall motion, wall-normal motion and wall blowing, the effectiveness of LEBUs to control the drag in a boundary layer and the influence of roughness on the separation from a cylinder and a rotating sphere;
- **reacting flows**—featuring advanced simulations of spray and pre-mixed flames;
- **highly curved and separated flows**—including the physics of impingement on a curved surface and separation from a wall-mounted cylinder and a backward-facing step;
- **particle transport**—with a focus on dust suspensions in a fusion reactor and sediment transport; and
- **compressible flows**—including shock-boundary-layer interaction, the propagation of strong shocks in low-viscosity fluids and the behaviour of carbon-dioxide at supercritical pressure and trans-critical temperature.

The Editors hope that the readers of this Special Issue will judge it to be a valuable contribution to the literature and to give credit to efforts by the scientific community to engage in turbulence modelling, simulation and measurements of immediate relevance to the industrial arena.

Michael Leschziner, Editor-in-Chief
Wolfgang Rodi, Editor
Bernard Geurts, Guest Editor