Agenda for TTT-RCA CFD Prediction Error Assessment Workshop, March 20-22, 2018
Lockheed-Martin Center for Innovation
8000 Harbourview Boulevard, Suffolk, VA 23435

TC Statement: Identify and downselect critical turbulence, transition, and numerical method technologies for 40% reduction in predictive error against standard test cases for turbulent separated flows, evolution of free shear flows, and shock-boundary layer interactions on state-of-the-art high performance computing hardware.

Date	Index	Time	Item	Presenter/Org	Time
20-Mar					
		7.15am	**Registration**		
	1	8.00am	Overview of RCA research portfolio and Technical Challenge	Mujeeb Malik/LaRC	40
	2	8.40am	Wall-resolved LES of RCA test cases 1 and 2	Ali Uzun/NIA	30
	3	9.10am	Perspectives on RANS Modeling for Separated Flows [including Reynolds Stress Modeling (RSM)]	Chris Rumsey/LaRC	25
	4	9.35am	RSM at DLR	Bernhard Eisfeld/DLR	15
	5	9.50am	RSM applications to free shear flows and shock/boundary layer interaction	Jim Debonis/GRC	15
		10.05am	**Break**		**20**
	6	10.25am	Nonlinear turbulence models based on kL formulation	K. Abdol-Hamid/LaRC	25
	7	10.50am	Assessment of the triple-product and advanced Reynolds-stress Lag turbulence models	Mike Olsen/ARC	25
	8	11.15am	Towards a new approach to turbulence modeling: A case study of the SSC-EARSM model	Charles Hirsch/Numeca	15
		11.30am	**Lunch**		**75**
	9	12.45pm	Wall-modeled LES	Parviz Moin/Stanford	25
	10	1.10pm	Wall-modeled LES of compressible turbulent separated flows	Prahladh Iyer/NIA	25
	11	1.35pm	Hybrid RANS/LES models for aerodynamic flows: Application to the 2-D NASA hump	Robert Moser/UT_Austin	25
	12	2.00pm	Towards predictive simulations of turbulence: Reynolds stress closure to scale resolving simulations	Sharath Girimaji/Texas A&M	25
		2.25pm	**Break**		**20**
	13	2.45pm	Model-invariant hybrid LES-RANS Computations: Wall-modelled and embedded-LES	Steve Woodruff/LaRC	25
	14	3.10pm	LES of a shock wave boundary-layer interaction	Manan Vyas/GRC	25
	15	3.35pm	Wall modeled Lattice Boltzmann and Navier-Stokes approaches for selected RCA cases	Cetin Kiris/NASA ARC	25
	16	4.00pm	LBM results for standard test cases	Benjamin Duda/EXA	15
	17	4.15pm	LES of a compressible mixing layer and the significance of inflow turbulence	Mina Mankbadi/GRC	25
		4.40pm	**End of Day 1**		
		6.30 PM	**Group Dinner**		
21-Mar					
		7.30am	**Start of Day 2**		
	18	8.00am	Prediction of turbulent temperature fluctuations in hot jets	Jim Debonis/GRC	25
	19	8.25am	DNS/LES of separated flows	P. Balakumar/LaRC	25
	20	8.50am	DNS of turbulrnt separation bubbles: Implications for RANS modeling	G. Coleman/LaRC	25
	21	9.15am	HPC and unstructured-grid algorithms for a many-core landscape	Eric Nielsen/LaRC	25
	22	9.40pm	Stabilized finite-elements in FUN3D	Kyle Anderson/LaRC	25
		10.05am	**Break**		**20**
	23	10.25am	Overview of combined error and uncertainty estimates for CFD problems	Tim Barth/ARC	35
	24	11.00am	Development of the eddy framework for scale-resolving simulations	Scott Murman/ARC	25
	25	11.25pm	Flux reconstruction approach for space and time discretization	HT Huynh/GRC	25
		11.50am	**Lunch**		**60**
	26	12.50pm	GFR – Glenn flux reconstruction code	Seth Spiegel/GRC	25
	27	1.15pm	The quest and achievement of CFD's holy grail: nonlinear stability	Mark Carpenter/LaRC	25
	28	1.40pm	Improving predictability & reliability in computing multiscale compressible turbulence	Helen Yee/ARC	25
	29	2.05pm	Tetrahedral-mesh DNS/LES of shock and turbulent-flow interactions using the space-time CESE method	Chau Chang/LaRC	25
		2.30pm	**Break**		**20**
	30	2.50pm	Third order accurate hyperbolic NS schemes	Nishikawa/NIA	25
	31	3.15pm	Status of advanced numerical solution techniques for unstructured finite volume CFD solvers	Mohagna Pandya/LaRC	25
	32	3.40am	Application of dependency inversion for multidisciplinary software development	Matthew O'Connell/LaRC	25
	33	4.05pm	Juncture flow experiment	Chris Rumsey/LaRC	25
		4.30pm	**End of Day 2**		

	7.30am	**Start of Day 3**		
34	8.00am	Benchmark Smooth Body Flow Separation Experiments for CFD Validation	Flint Thomas/Notre-Dame	25
35	8.25am	Experimental measurements of turbulent, compressible mixing layers for CFD validation	Craig Dutton/U Illinois-UC	25
36	8.50am	Turbulent heat transfer experiments	Nick Georgiadis/GRC	25
37	9.15am	CFD validation experiments of a Mach 2.5 axisymmetric shock-wave/boundary-layer interaction	Dave Davis/GRC	25
	9.40am	**Break**		**20**
38	10.00am	Measurements of transition induced by tandem roughness elements	Amanda Chou/LaRC	25
39	10.25am	Effects of 2D surface excrescences on swept-wing boundary layer transition	Jenna Eppink/LaRC	25
40	10.50am	Physics based transition modeling	Meelan Choudhari/LaRC	25
	11.15am	Wrapup/Q&A	TBD	35
	11.50pm	**Lunch**		**60**
	12.50pm	**Group Discussion: Future Directions/Whither Turbulence Prediction?**		
	12.50pm	Roadmap for RANS model development:		
		New model development, data-driven, UQ, verification & testing of promising RANS models	Philippe Spalart	45
	1.35pm	Roadmap for hybrid RANS/LES and WMLES model development:		
		Limitations? cost vs. accuracy? how to achieve more consistency?	Johan Larsson	45
	2.20pm	**Break**		**25**
	2.45pm	Experiment cataloging, DNS and LES repository:		
		How to approach this task, what new/repeat experiments are needed?		
		What/where/how to store, what new cases are needed, what can be done to make better use of DNS/LES for RANS/HRLES/WMLES improvement?	Chris Rumsey	45
	3.30pm	Numerical methods for turbulence simulations:		
		Role of numerical methods, what is expected?	Karthik Duraisamy	35
	4.05pm	Future and integration:		
		Working toward Vision 2030, integration plan, next steps	Karthik Duraisamy	45
	4.50pm	**End of Workshop**		