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Tangent linear and adjoints

Tuesday, 25 February 2020 15:45 (1 hour)

The goal of this lecture is to familiarise the student with the notion of tangent linear and adjoint models, and their use in variational data assimilation. A general overview of the current use of tangent linear and adjoint models in the ECMWF system will also be provided. Theoretical definitions and practical examples of tangent liner and adjoint models will be given. The student will be invited to work some simple tangent linear and adjoint derivations together with the instructor. A brief introduction to automatic differentiation software will also be given.

By the end of the session you should be able to:

• define what tangent linear and adjoint models are
• derive tangent linear and adjoint equations for a simple nonlinear equation
• describe the use of tangent linear and adjoint codes within the ECMWF's 4D-VAR system.

Presenter: CHRUST, Marcin (ECMWF)