Comments on the Tangent Linear and Adjoint Coding Class Presentations:

I was asked by the Joint Center for Satellite Data Assimilation to give a class on Tangent Linear and Adjoint Coding Techniques. The presentations provided here those that I gave during that class. Subsequently, I have presented this material in condensed format in a few seminars. The intent here is for the student to proceed through the material sequentially:

1. Optical Path Transmittance: OPTRAN. Forward and Adjoint Modeling (PDF)
2. Tangent Linear Coding (PDF)
3. Adjoint Coding (PDF)
4. Jacobian (or K) Coding (PDF)

The discussion of OPTRAN is intended to give a basic background for a forward model from which the other models will be developed. The road map for the class is also included in this section.

Each lecture ends with a discussion of a simple coding problem to be solved before the next lecture. I encourage readers to code these problems, and compare their answer with that which I provide. Note that your answer may be slightly different than mine and still be correct. Rely on the testing methodology to verify that your code is correct.

I hope that readers may find these notes useful. Good luck and best wishes.

Tom Kleespies 3 May 2006