Teaching Fortran across cultures & continents

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• A range of our international Fortran training over the last 3 years:

  ▪ Copenhagen, January 2008
  ▪ Ottawa, Canada, March 2008
  ▪ Centre for Ecology & Hydrology, Wallingford, UK, March 2009
  ▪ University of Ulster, December 2009
  ▪ SHMU, Bratislava, Slovakia, February 2011
  ▪ Shoreham-by-Sea, UK, October 2011
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We try to teach with NAG’s Fortran Builder

- IDE (Integrated Development Environment)
  - easy editing, compiling, linking & running
- version 5.3 Fortran compiler
  - good error messages
Copenhagen, Denmark, 2008

Danish Technical University (DTU)
Introduction to Fortran 95
our experiences:

- cold!
- using Copenhagen’s rail system
- eating & drinking
  - very expensive!!!
what was required:
  - introduction to Fortran 95 as a precursor to an MPI course
who:
  - Mathematical modelling Ph D students
class of 30
  - wide range of programming experience
• Fortran compiler(s)
  ▪ NAG
  ▪ Sun
  ▪ gfortran
• operating system
• Sun solaris
National Resources Canada (NRCAN)
Ottawa March 2008
Ottawa March 2008

Spider by Louise Bourgeois outside National Gallery of Canada, Ottawa
our experiences:

- scary taxi drive from airport to Ottawa
- snow!!!
- using public transport & the snow!
  - very difficult to get around – so much snow
  - very cold!!!
- French
what was required:
- introduction to Fortran 95 & conversion from Fortran 77

who (15):
- economists in National Resources department of Canadian Government
  - oil shale & gas modelling
  - US were lead site but no experience of oil shale
  - US had started to introduce Fortran 95 features
• Fortran compiler(s)
  ▪  visual studio 6 & Intel compiler
    ➢  Fortran 95 standard
• operating system
  ▪  Windows XP
Centre for Ecology & Hydrology
Wallingford UK March 2009

Centre for Ecology & Hydrology (CEH)
Introduction to Fortran 95
our experiences:
- very bright group of young scientists
- extensive and advanced use of Fortran amongst experienced colleagues
- Wallingford – lovely old market town!
what was required:
  - introduction to Fortran 95
who (4):
  - scientists working with Fortran 77/ 95 code and statistical package R
• Fortran compiler(s)
  ▪ NAG Fortran builder & NAG compiler from command prompt
• operating system
  ▪ Windows XP
Belfast December 2010

University of Ulster
University of Ulster

- our experiences:
  - lack of public transport
  - very welcoming & friendly group
  - tutor had a very bad cold
    - visit to local health centre
  - delayed flight home
    - snow!!!
what was required:
- introduction to Fortran 95
  - for use with mechanical engineering package

who (6):
- mechanical engineering Ph D students
  - no programming experience
- staff
  - range of programming experience
University of Ulster

- Fortran compiler(s)
  - NAG Fortran Builder
- operating system
  - Windows XP
Bratislava Slovakia 2011

SHMU, Bratislava, Slovakia, February 2011
senior meteorologist with punched cards!!
Snow not predicted!!
Bryndzové Pierogies
(Sheep cheese Pierogies)
SHMU Bratislava

- our experiences:
  - very hospitable
  - cold!!
  - english only spoken in hotel
  - public transport
    - trams & buses
  - Slovakian food & wine
  - Czech beer!

28 September 2011
what was required:

- introduction to modern Fortran with IBM’s XL Fortran compiler for AIX, V13.1
- compiler options for optimisation
- introduction to MPI

who (11):

- meteorologists
  - range of programming experience
• Fortran compiler(s)
  ▪ XL Fortran compiler for AIX, V13.1
    ➢ supports a lot of Fortran 2003 standard
• operating system
  ▪ AIX - unix
Shoreham-by-Sea UK 2011

Shoreham-by-Sea harbour
Shoreham-by-Sea beach

Which Fortran compiler?
our experience:
  - lack of compiler support for Fortran 2003/2008 standards
    - NAG Fortran compiler for OO
    - Intel compiler for OpenMP & coarrays
    - Intel MPI library needed
what is required:
- advanced features of modern Fortran
  [www.fortranplus.co.uk/adv_fortran.html](http://www.fortranplus.co.uk/adv_fortran.html)
- introduction to object oriented programming in Fortran
- introduction to parallel programming
  - MPI, OpenMP, Coarray Fortran

who (6):
- mechanical engineers
Fortran compiler(s)
- Intel parallel studio XE 2011 v 12 compiler
- gfortran v 4.7
- NAG Fortran compiler v 5.3

operating system
- Windows & Linux
Compiler Support for the Fortran 2003 and 2008 standards

On the Fortranplus website:

www.fortranplus.co.uk/fortran_info.html