The Soils of Northern Ireland and their Environmental Significance

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Part 2: Barry Rawlins, BGS

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TELLUS CONFERENCE 17-18 October 2007

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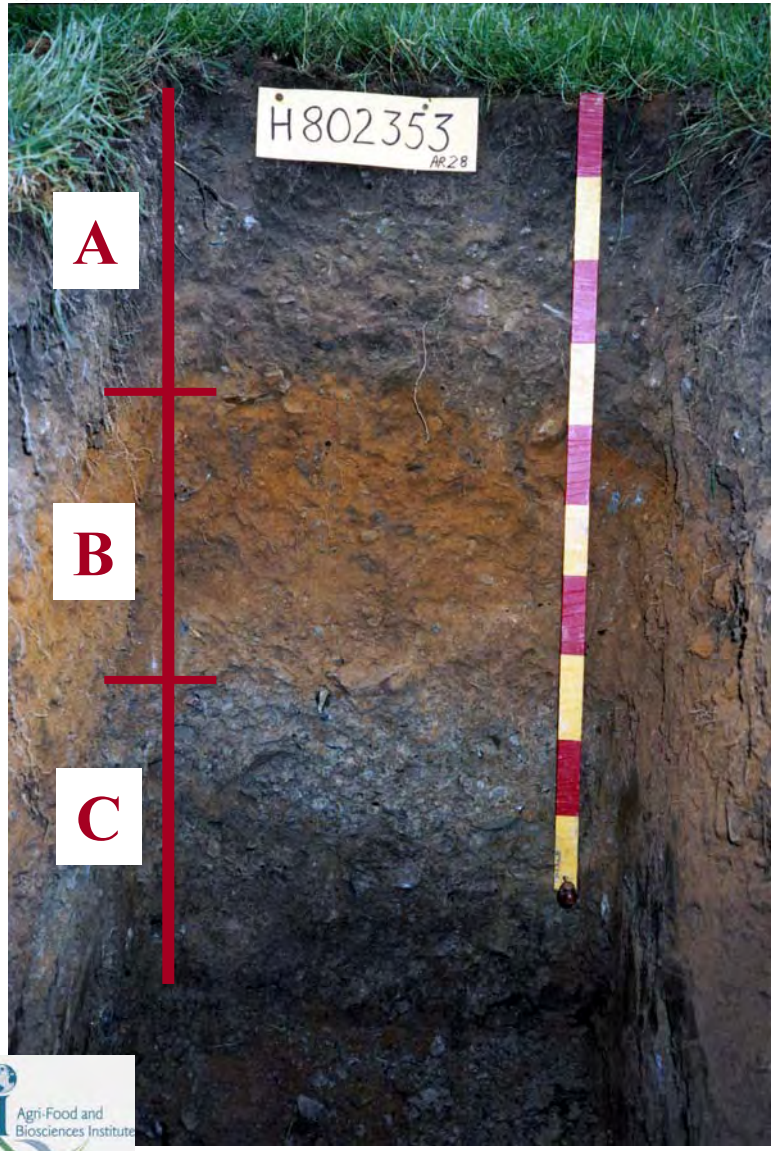
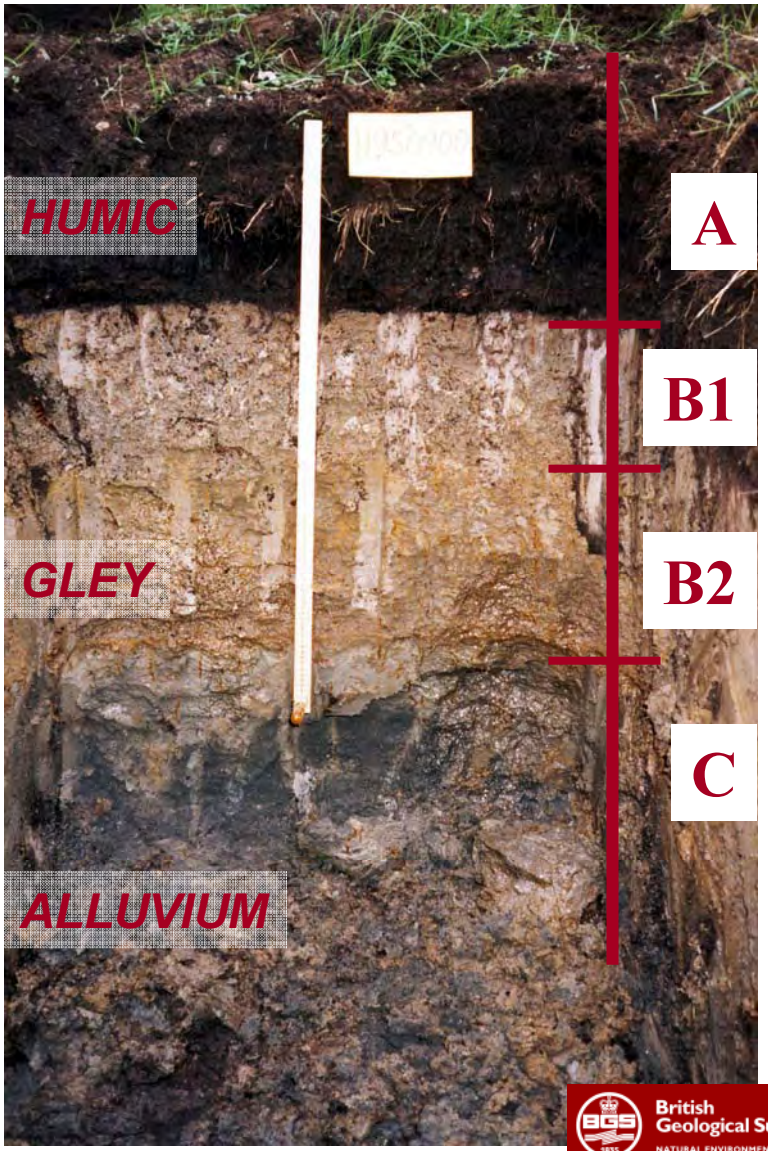
AFBI Soil Classification Survey 1988-97

Soil pit photos with Horizons

Brown Podzolic
on Shale Till



Humic Gley
on Alluvium



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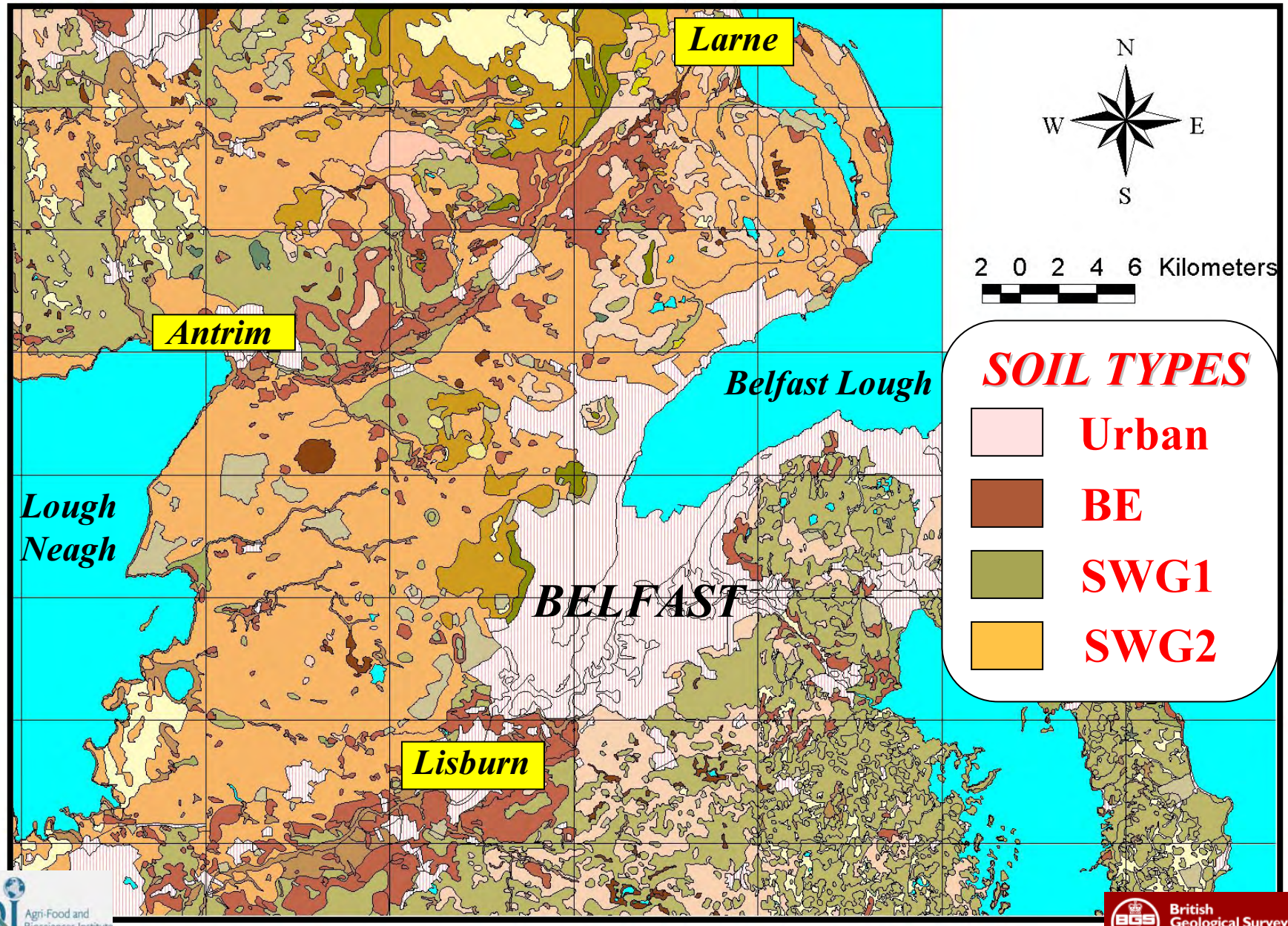
AFBI Soil Survey Map 1:50,000



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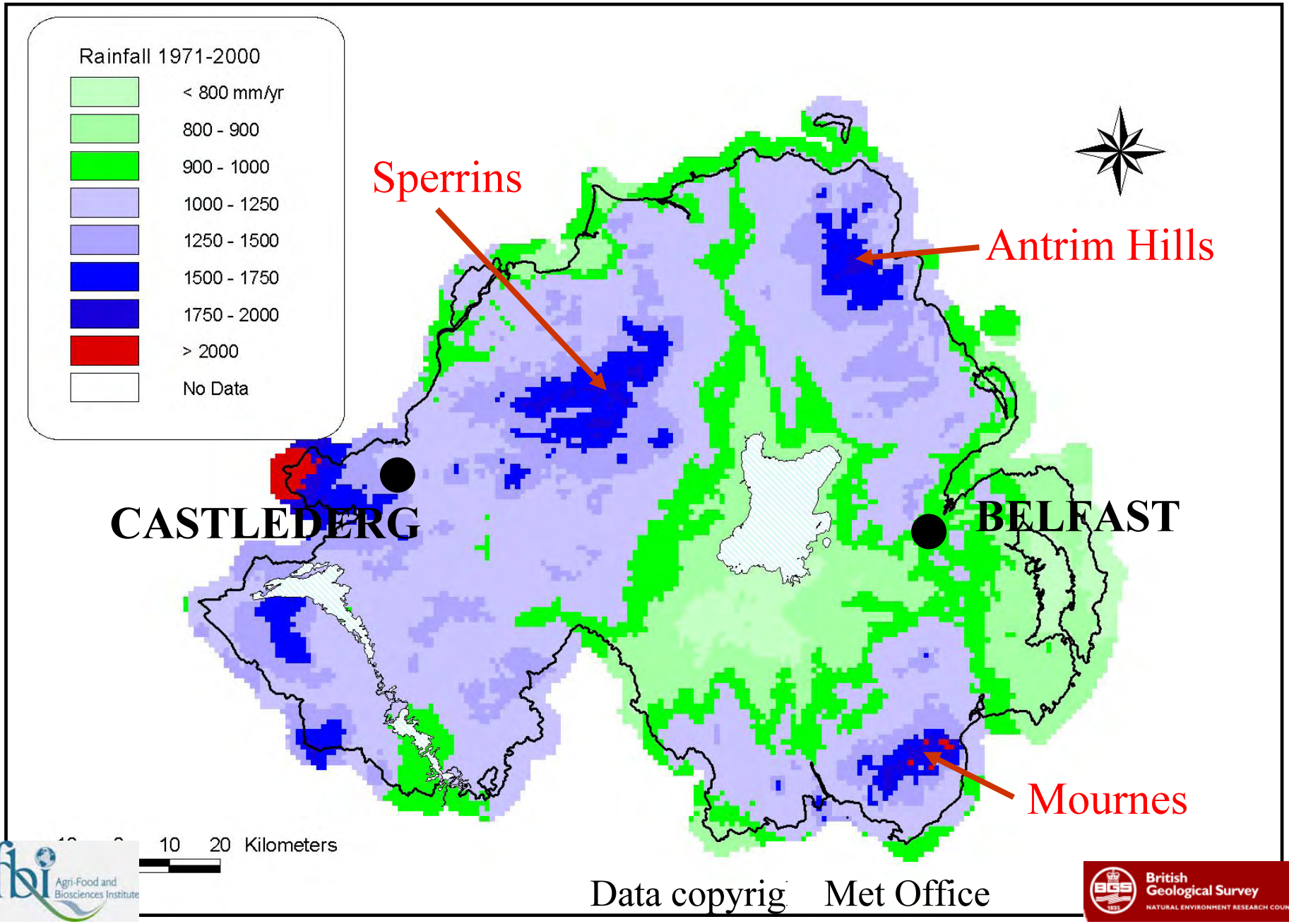
Annual Average Rainfall 1971-2000 (mm/yr)



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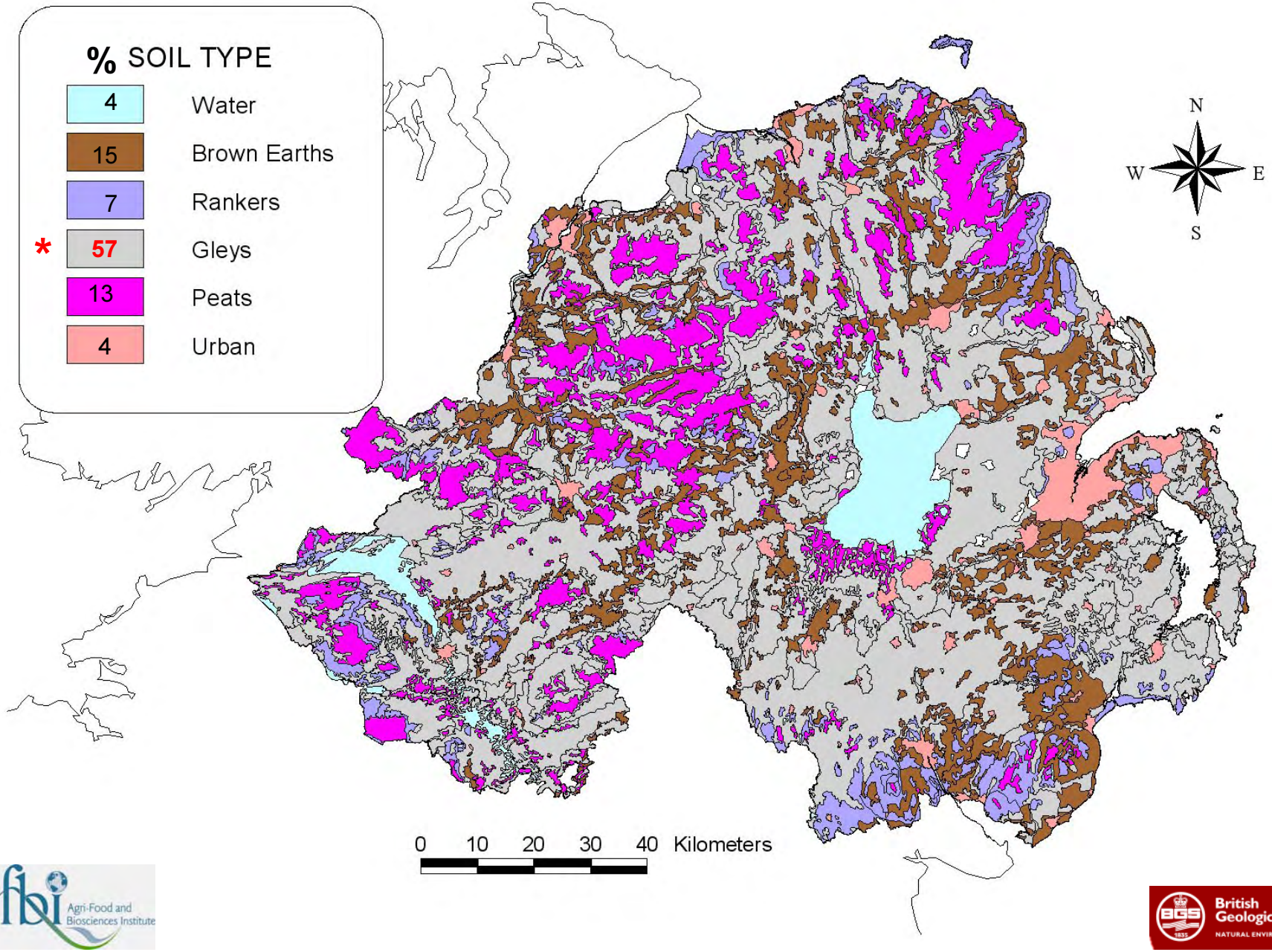
Major Soil Types



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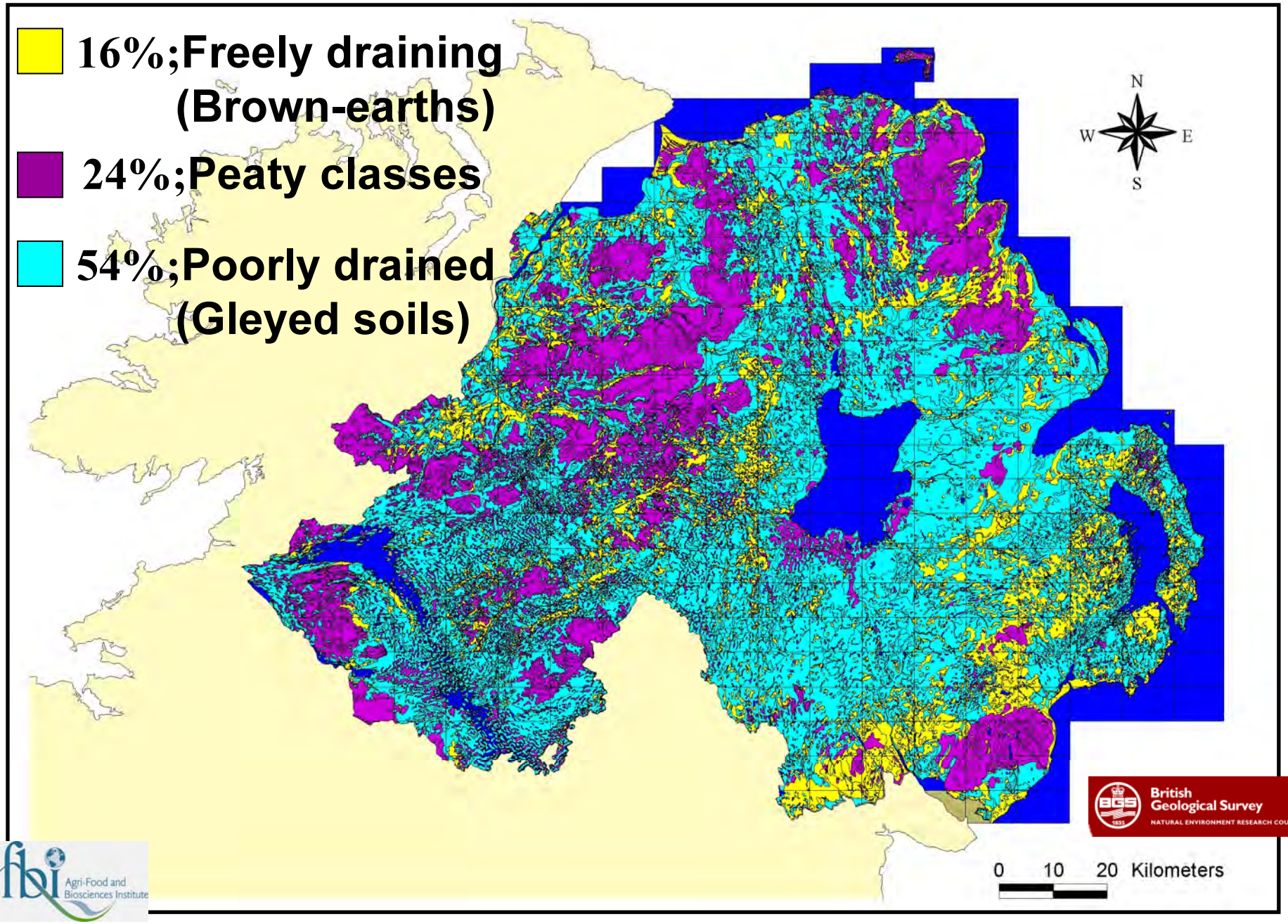
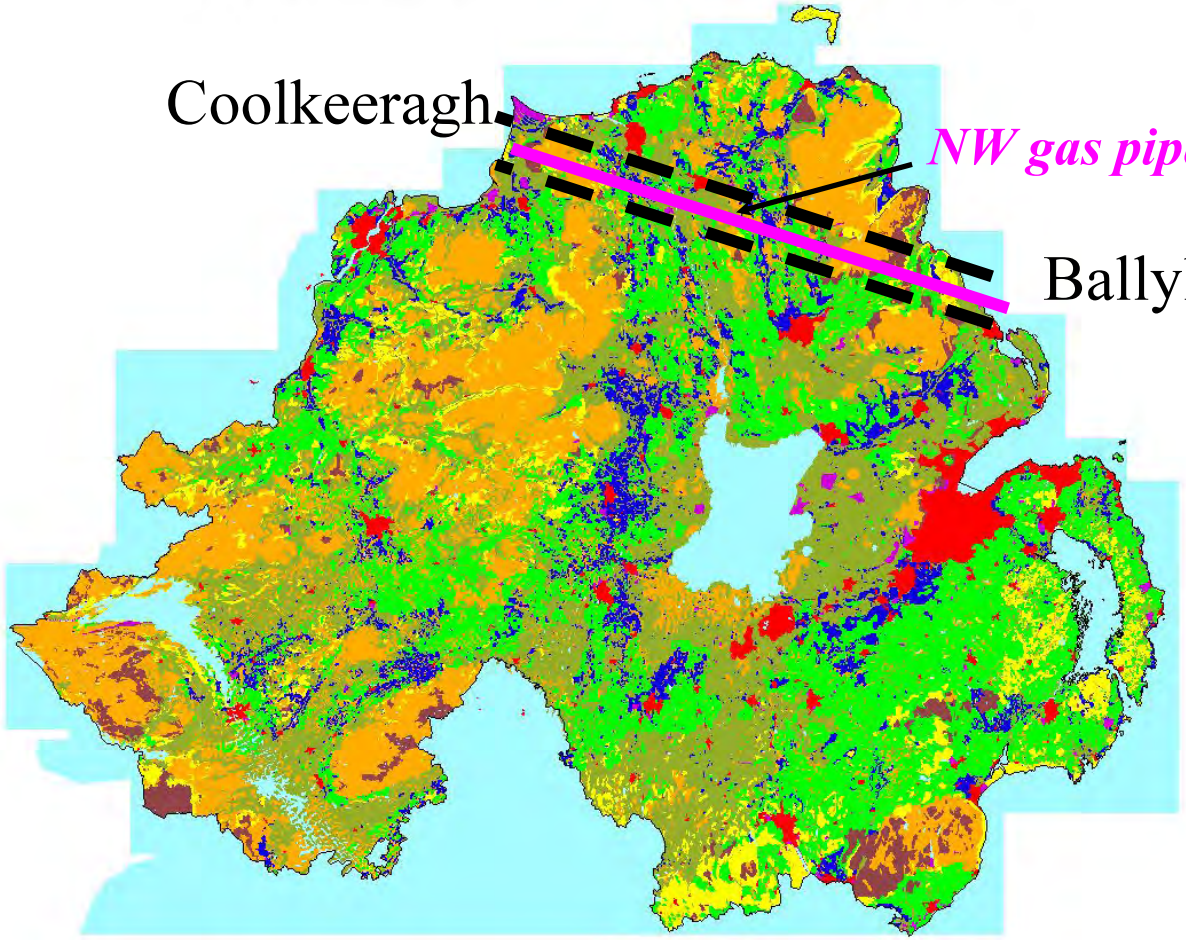
Hydrology Of Soil Types (HOST)



Agricultural Land Classification



Land Classes

- 2
- 3A
- 3B
- 4A
- 4B
- 5
- Disturbed
- Urban
- NUL

CLASS	% NI
2	7.1
3A	23.9
3B	26.1
4A	7.7
4B	22.9
5	3.1
5D	0.8
5U	3.9
Water	4.6

0 50 100 Kilometers

N

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Soil Quality Indicators Measured by AFBI

Largely based around indicators to monitor the environmental quality of soils, especially those relating to sustainable agriculture, including :

Physical :

- **Soil texture (% sand, silt and clay)**

Chemical :

- **pH**
- **Available-P *(Olsen-P)***
- **Loss on ignition *(LoI)***
- **% C**

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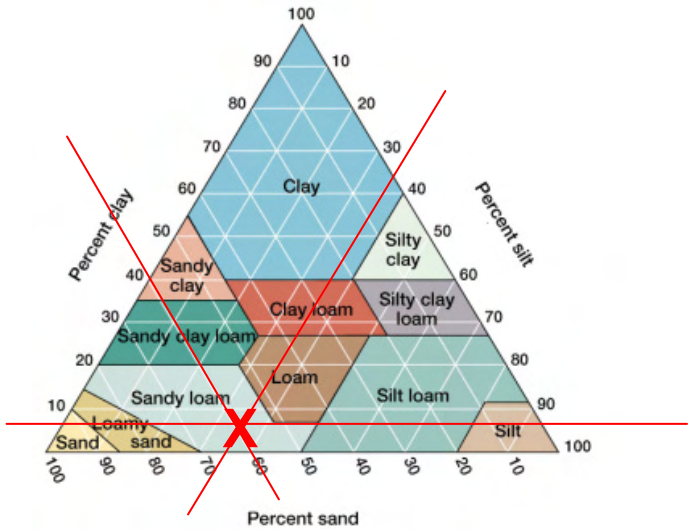
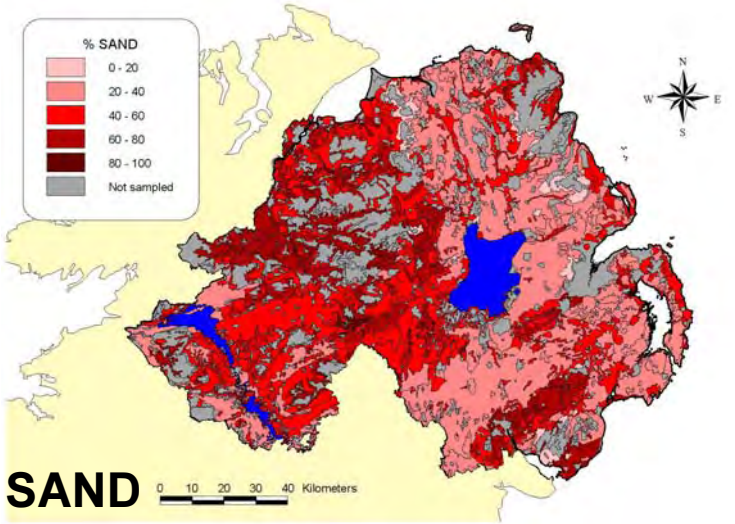
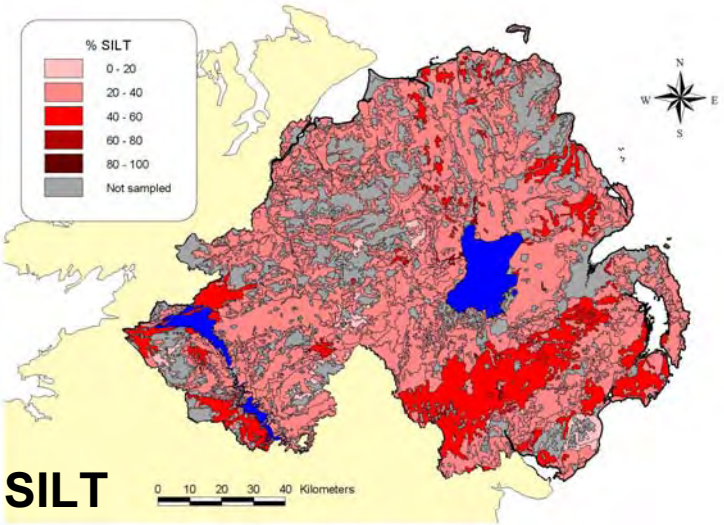
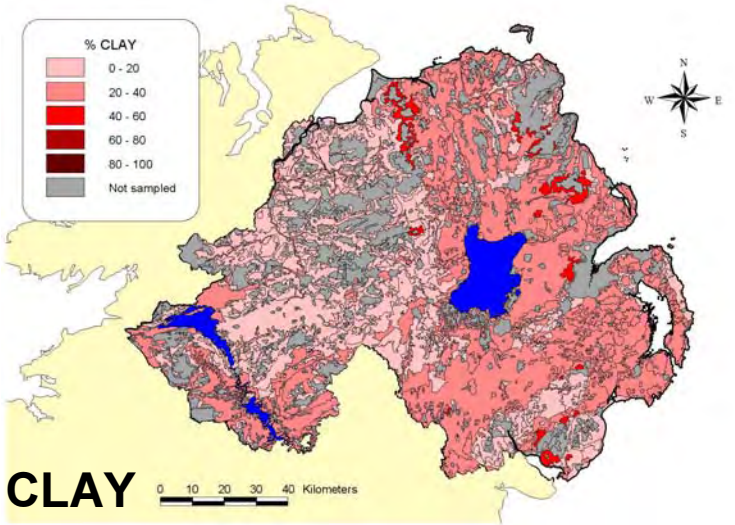
SOIL TEXTURE (% SAND, SILT, CLAY)









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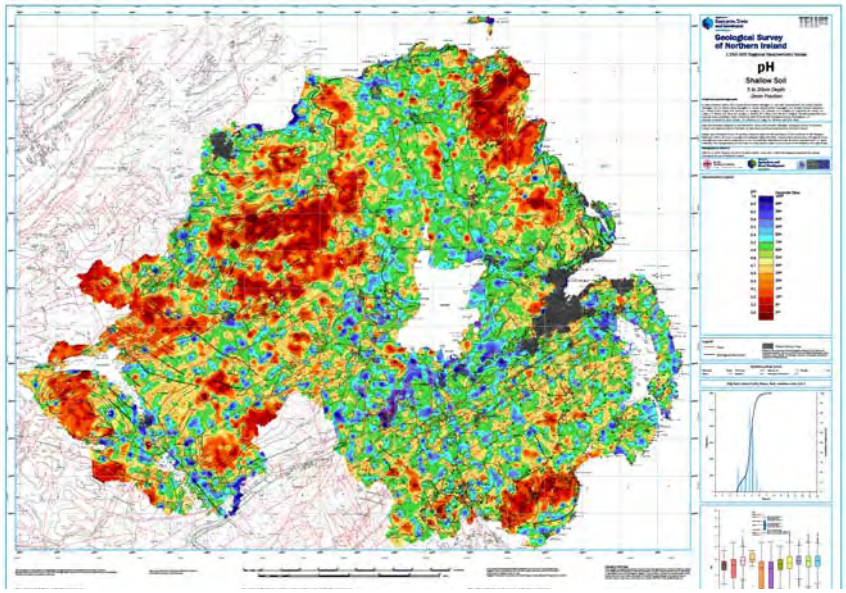
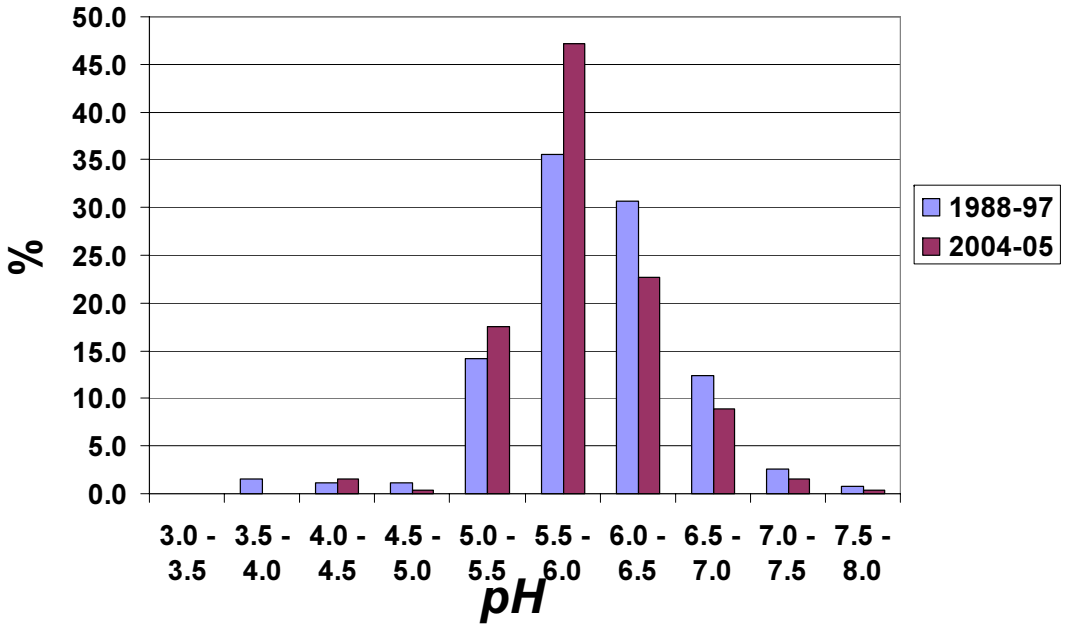
TELLUS Survey Topsoil pH ($CaCl_2$ extract)



1995 vs 2005



Mean pH:

pH 6.0

pH 5.9

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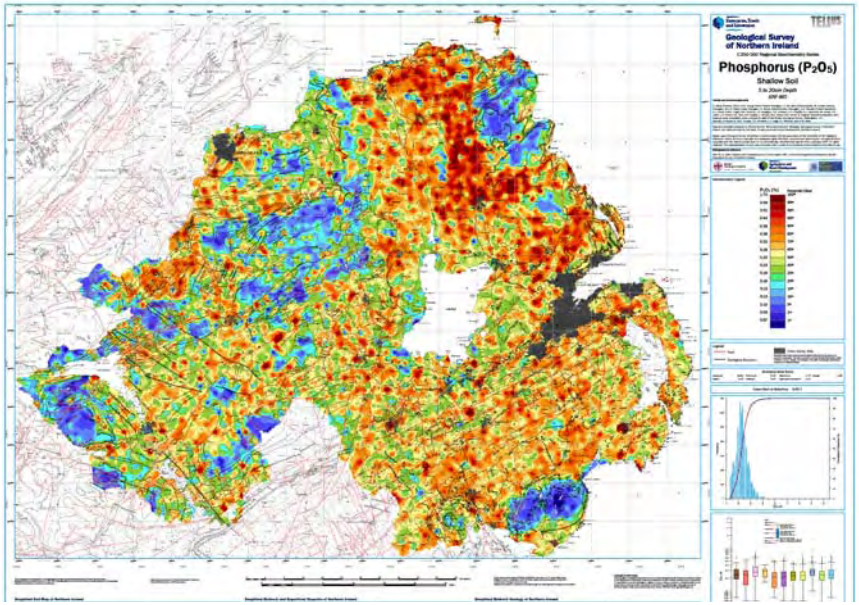
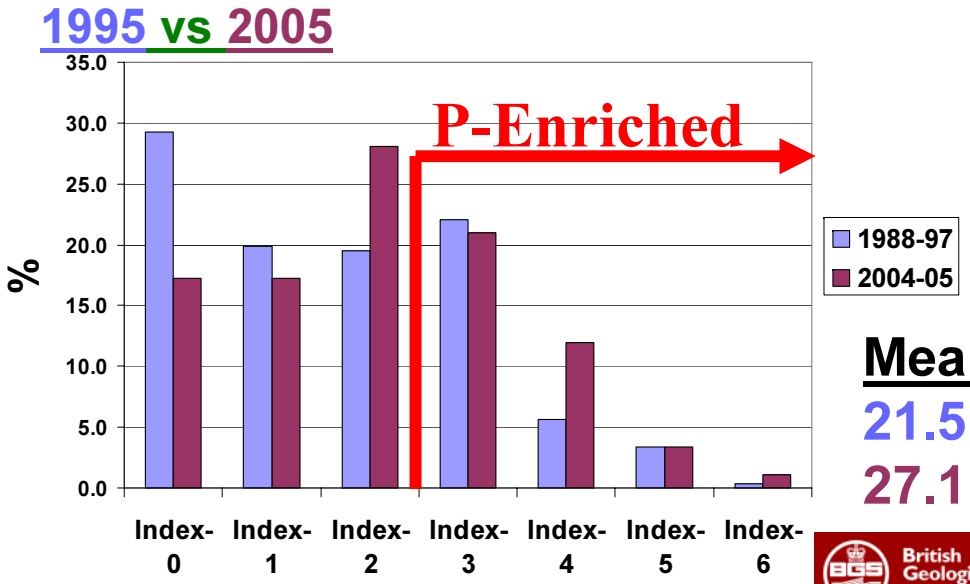
TELLUS Survey Topsoil total-Phosphorus (as P_2O_5)



Comparison of soil 'Available-P' values by P-Index

Available-P *(Olsen-P)*

(Improved Grassland only)



Mean P:

21.5 mg/l

27.1 mg/l

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Losses of agricultural-P from land to water

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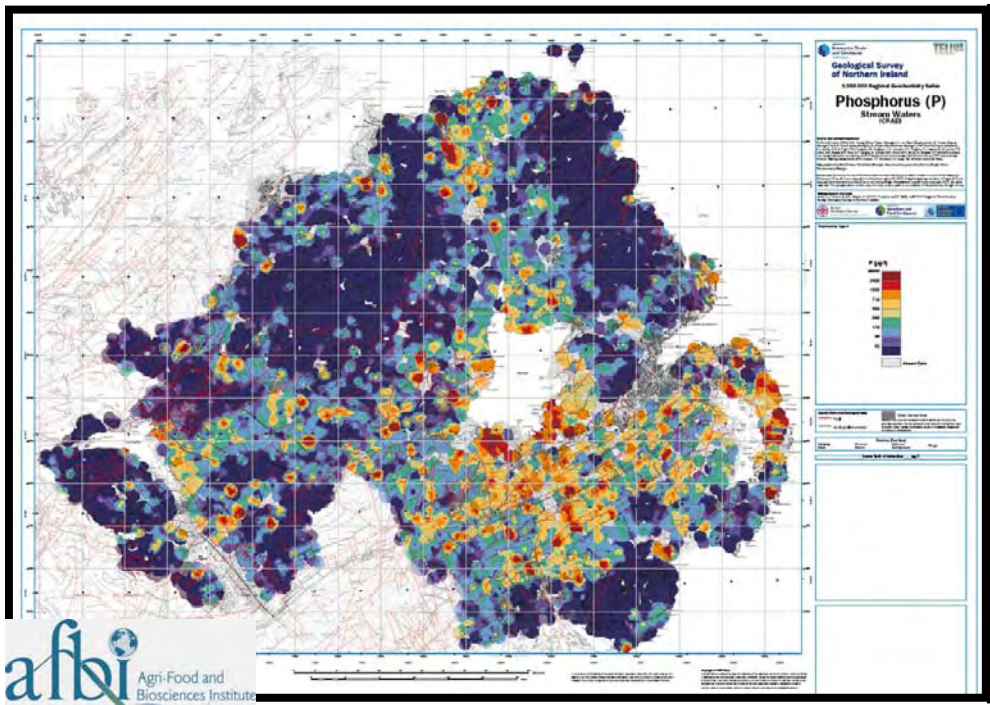
TELLUS SURVEY

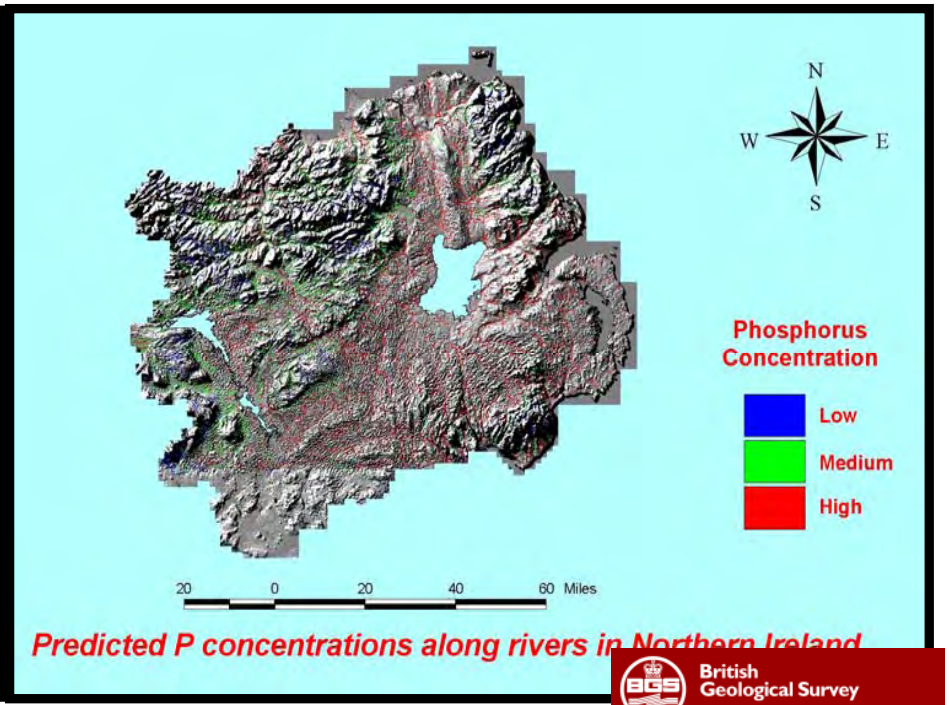
AFBI PREDICTION

Total-P in stream waters

Concs > 32 ug TP/l
are *eutrophic*
(i.e. all except dark blue)

Eutrophic waters
coloured RED





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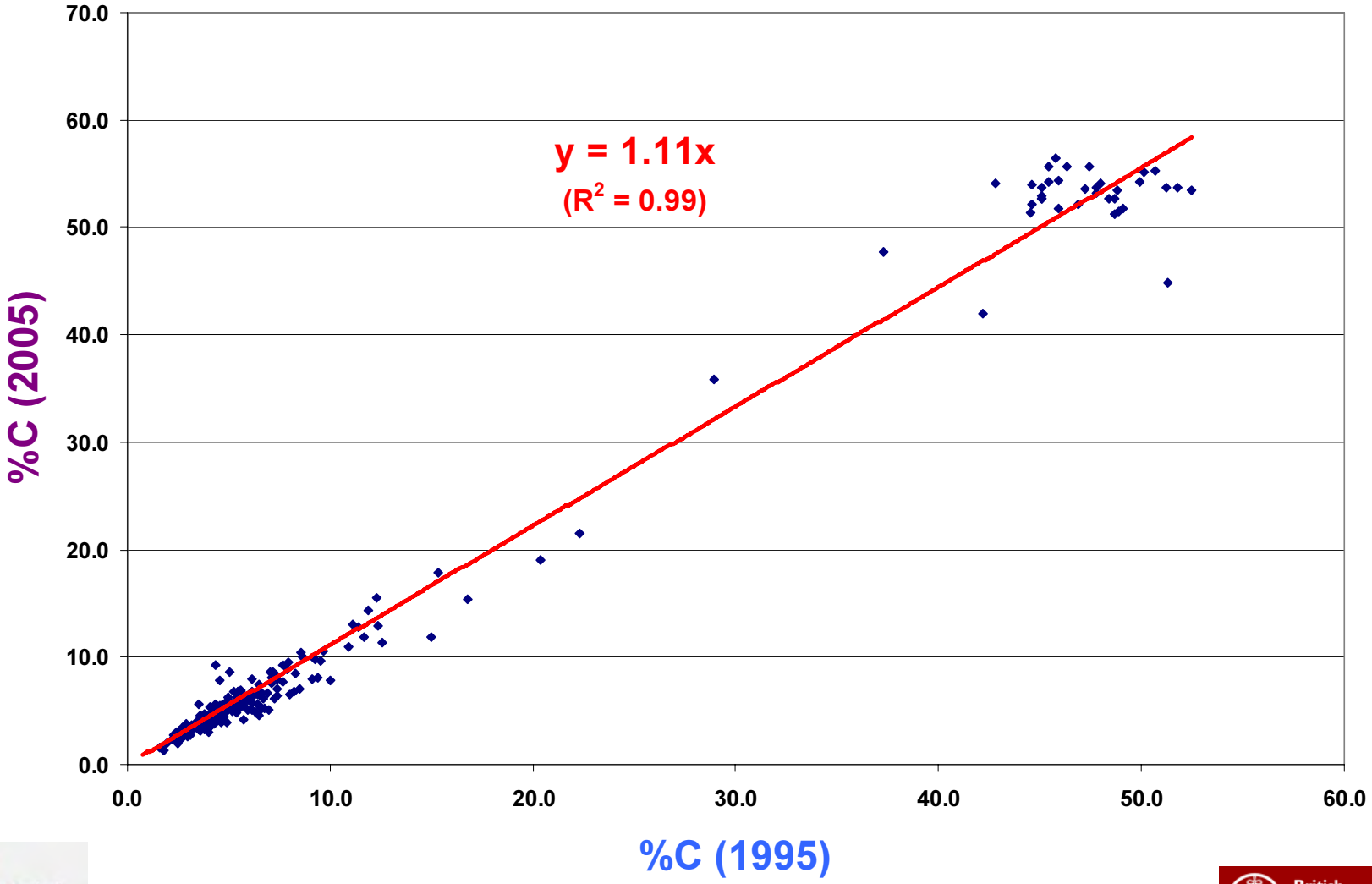
Comparison of Soil-Carbon values

230 Matched samples covering all land uses (A-horizon)

1995 vs 2005



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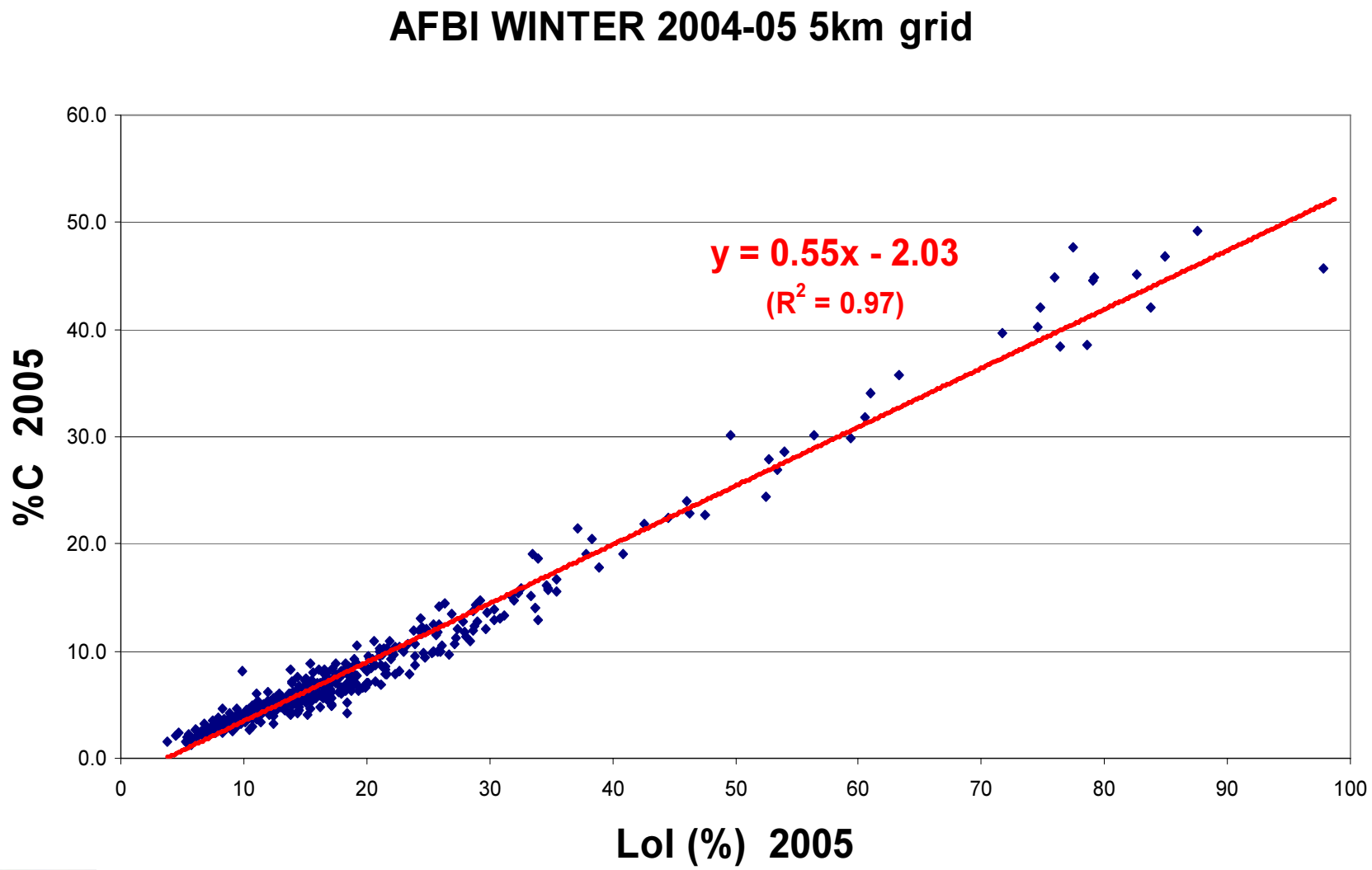
Relationship between Soil Carbon (%C) and Loss on Ignition (% LoI)



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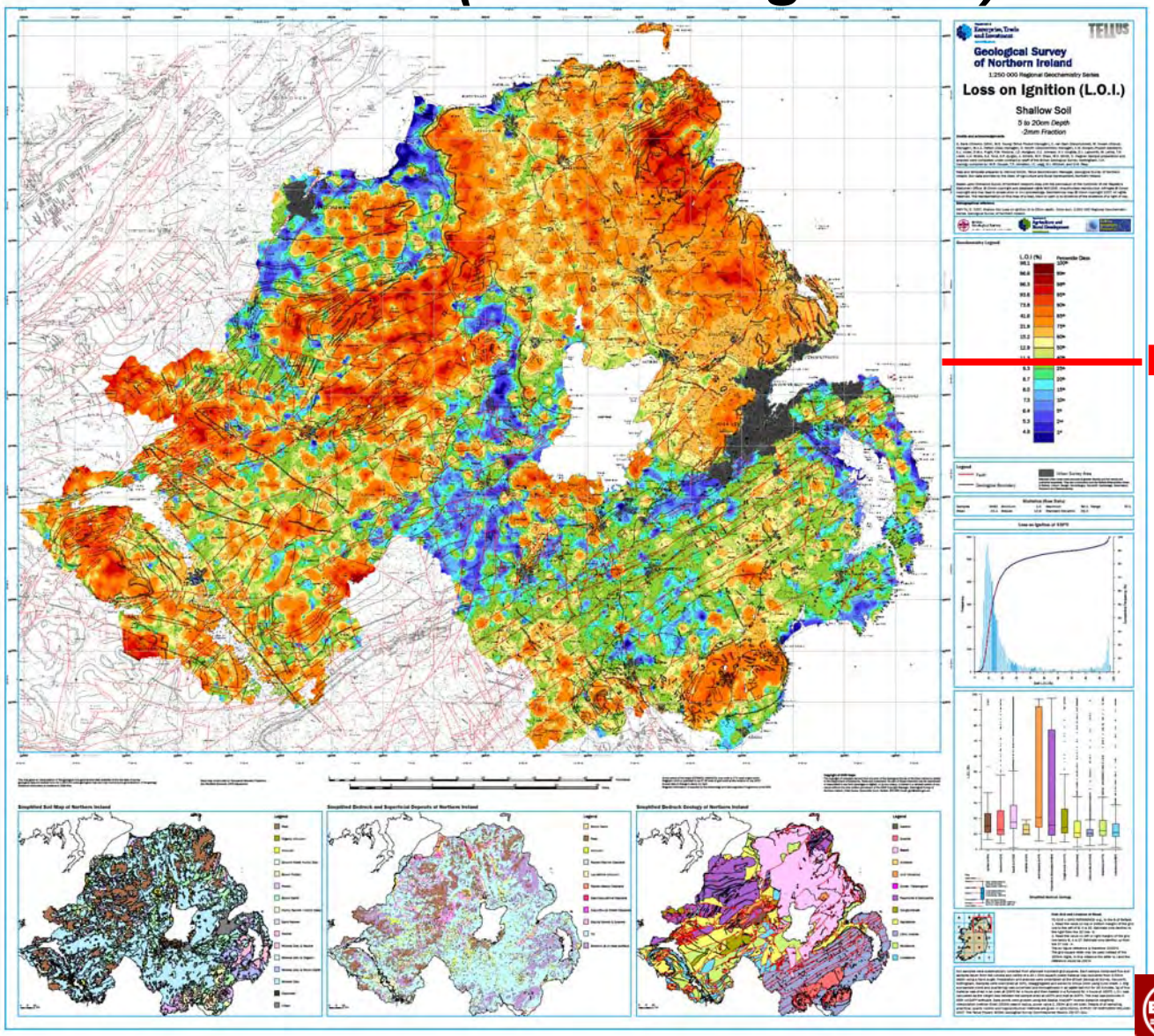
% Carbon = (Loss on Ignition) / 2



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(a) mean soil-C (mineral soils) = **5 %;**

(b) 2004 estimate of total stocks of C in all NI soils to 100cm depth = **296 Mt C**

Acknowledgments

(in alphabetical order)

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