

The Tellus Geochemical Programme Survey and Results

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Presentation Outline

- Sampling and Analysis
- Examples
 - Environmental/ anthropogenic correlation
 - Geological correlation
 - Mineral prospectivity assessment



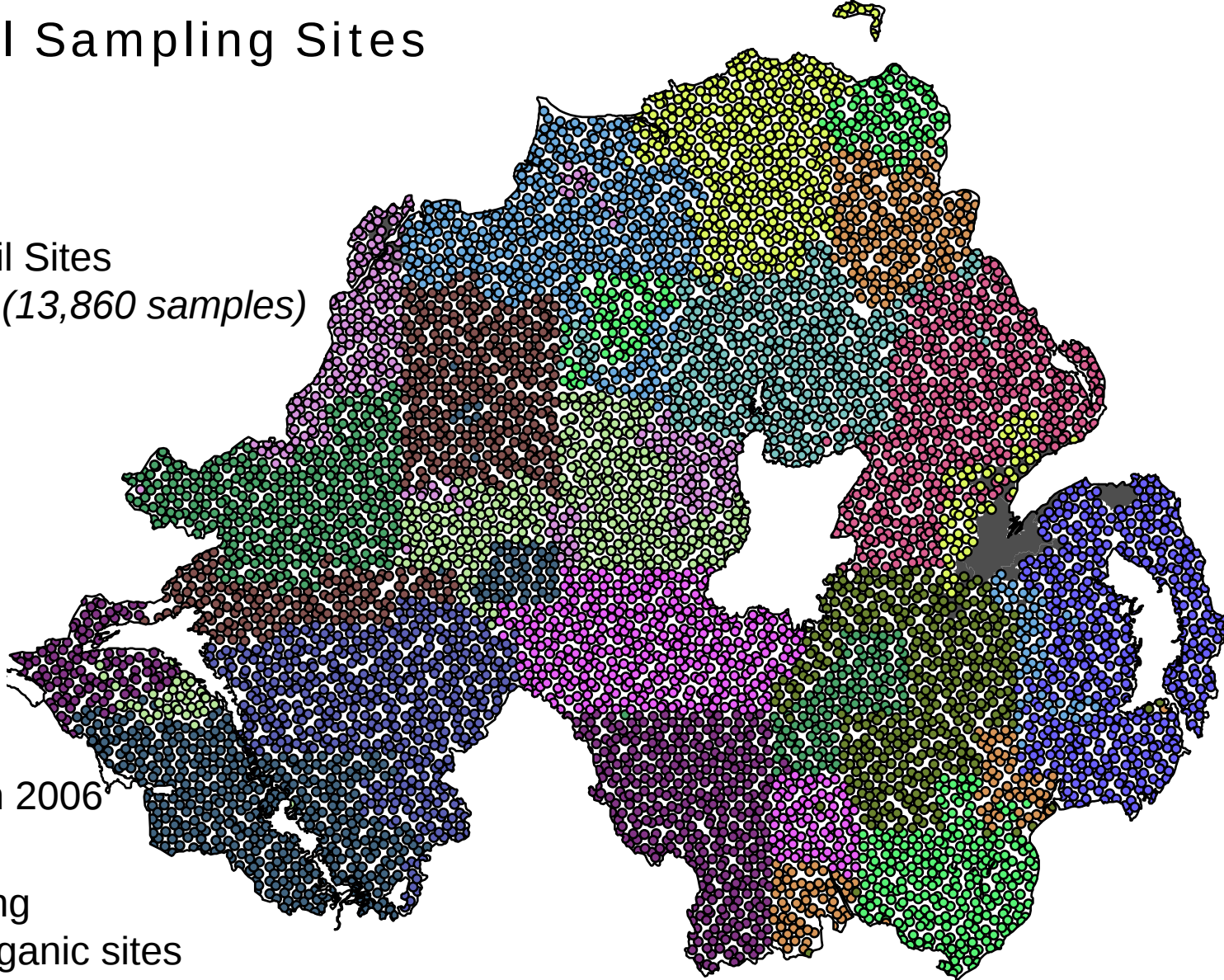
Regional Soil Sampling Sites

6,930 Regional Soil Sites
2 samples per site (13,860 samples)

“20cm” Depth
(5 to 20cm)
&
“50cm” Depth
(35 to 50cm)

Sampling Period
July 2004 to March 2006

Urban Soil Sampling
1,157 sites. 289 organic sites



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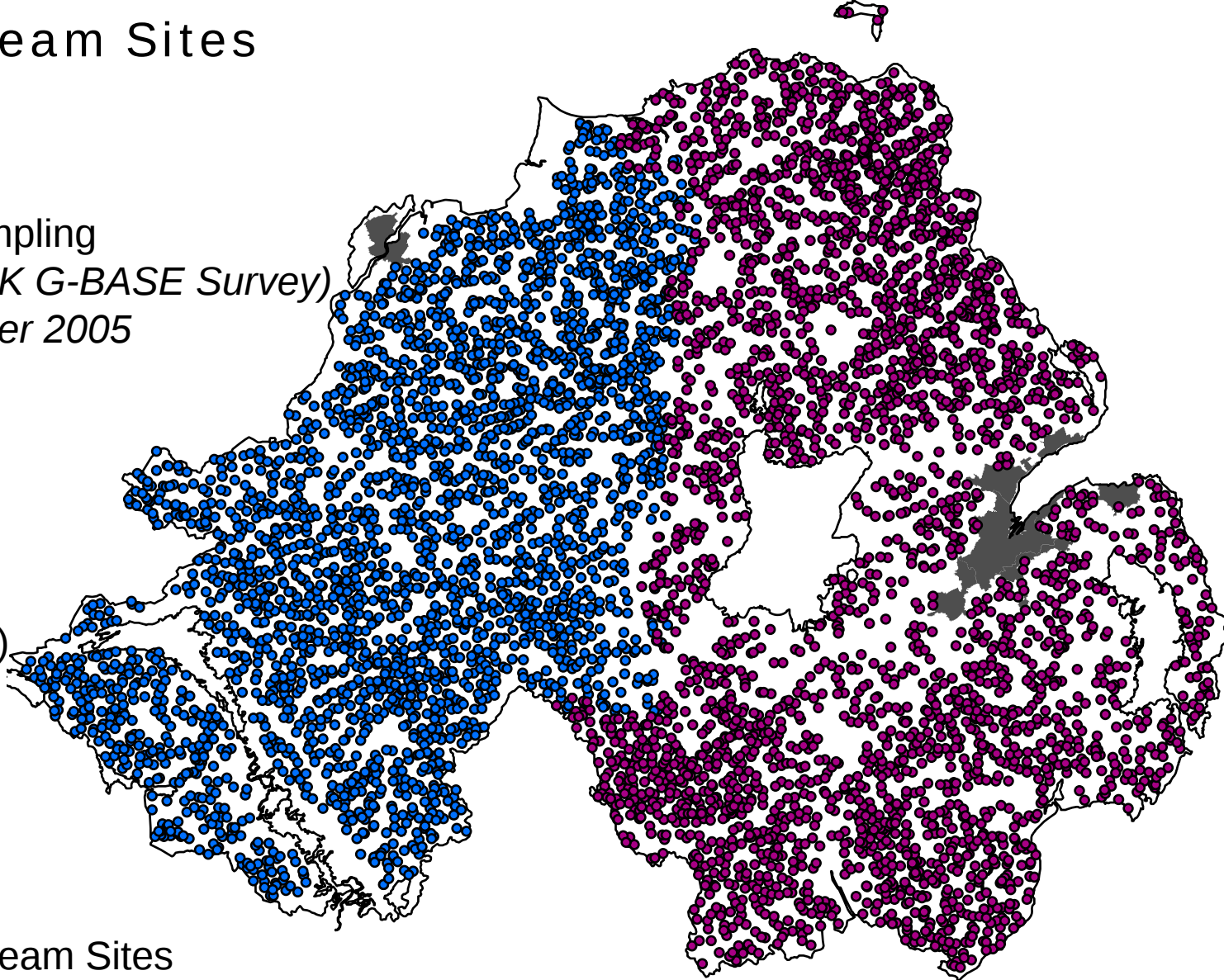
Regional Stream Sites

Two phases of sampling

1. 1994 to 1996 (UK G-BASE Survey)

2. July to September 2005

Water
Sediment (-150 μ m)
Pan concentrates



5,970 Regional Stream Sites

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Analytical Programme



Soil Sampling

Soil – “20cm sample” (5 to 20cm depth)

- XRF 40 elements, 12 oxides
- ICP-MS aqua regia (51 elements)
- Soil pH and loss on ignition

Soil – “50cm sample” (35 to 50cm depth)

- ICP-MS aqua regia (51 elements)
- ICP-MS “Near-total” (58 elements)
- Gold, platinum & palladium by fire assay



Stream Sampling

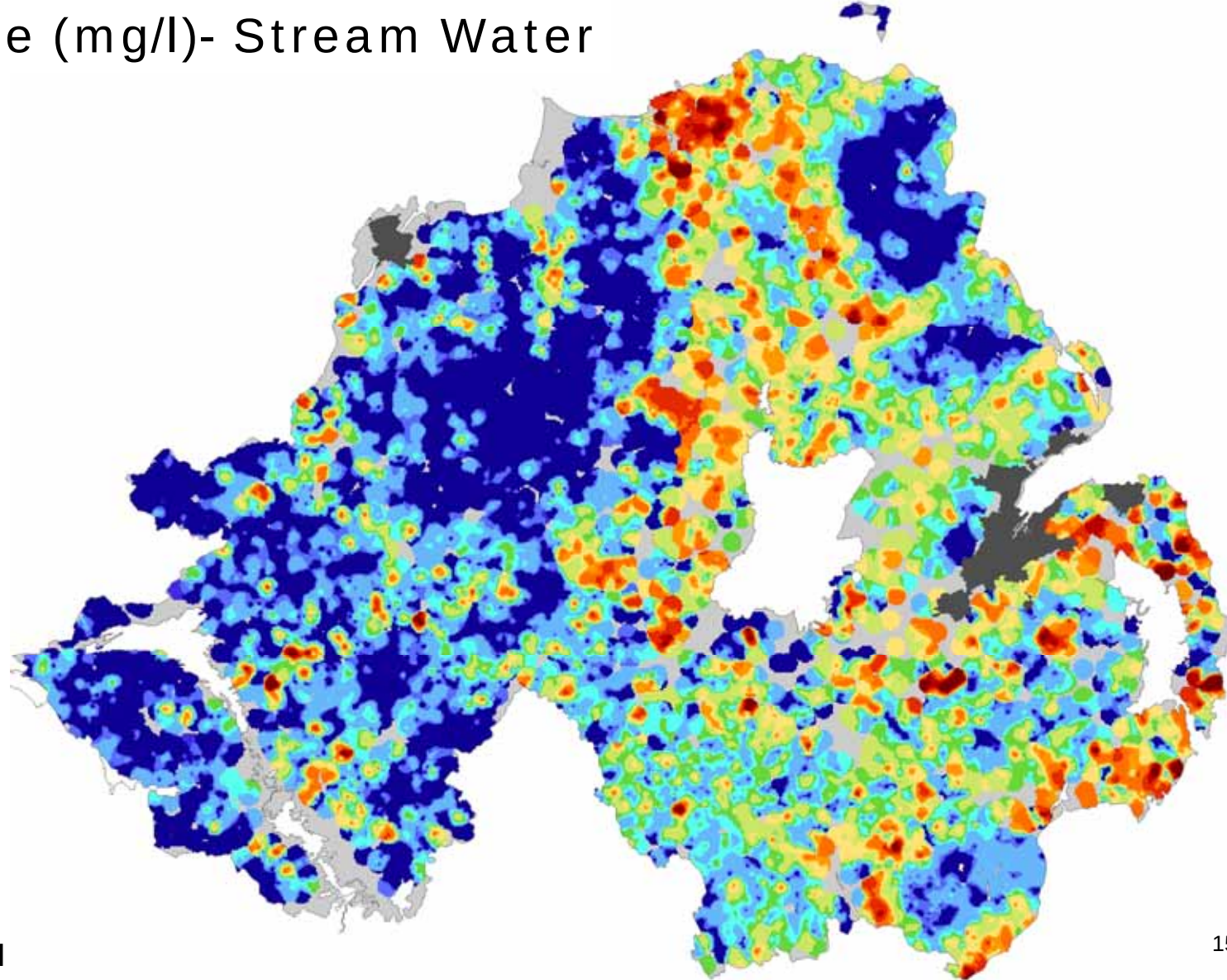
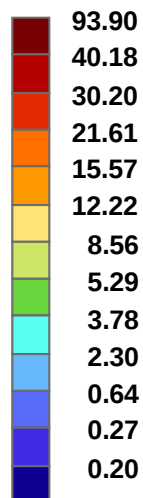
Stream Sediment

- XRF 40 elements
- 12 major oxides
- Gold, platinum & palladium by fire assay

Stream Water

- 44 Trace Elements
- Anions (bromide, chloride, fluoride, nitrate, sulphate, orthophosphate, NPOC)

Nitrate (mg/l)- Stream Water



DL 0.2mg/l

250m Cell size
1500m Fixed radius
IDW method

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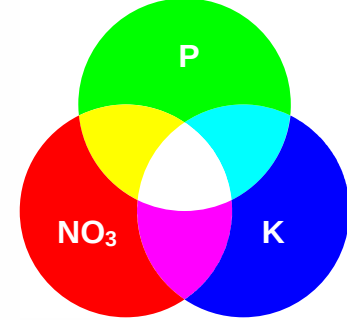
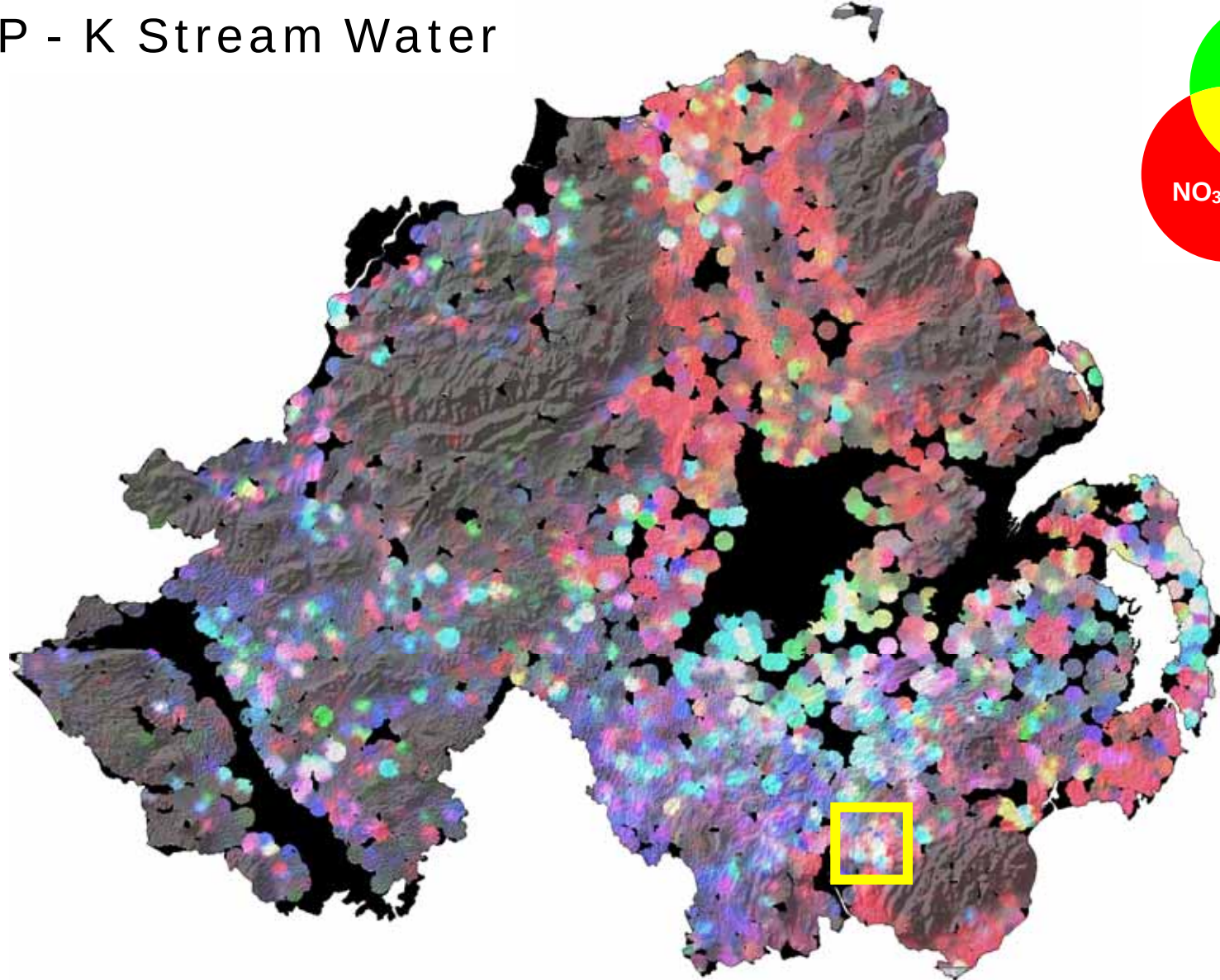
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NO₃ - P - K Stream Water



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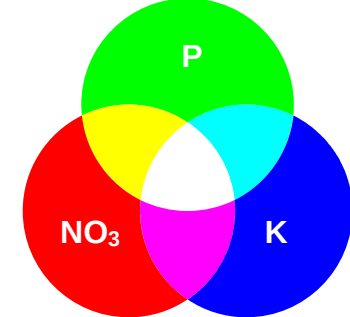
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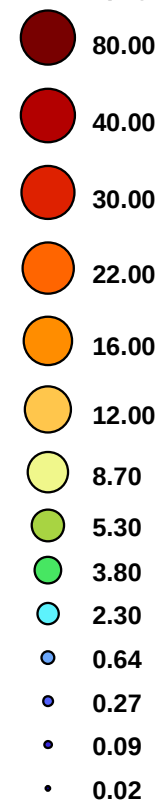
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NO₃ - P - K Stream Water



Nitrate (mg/l)



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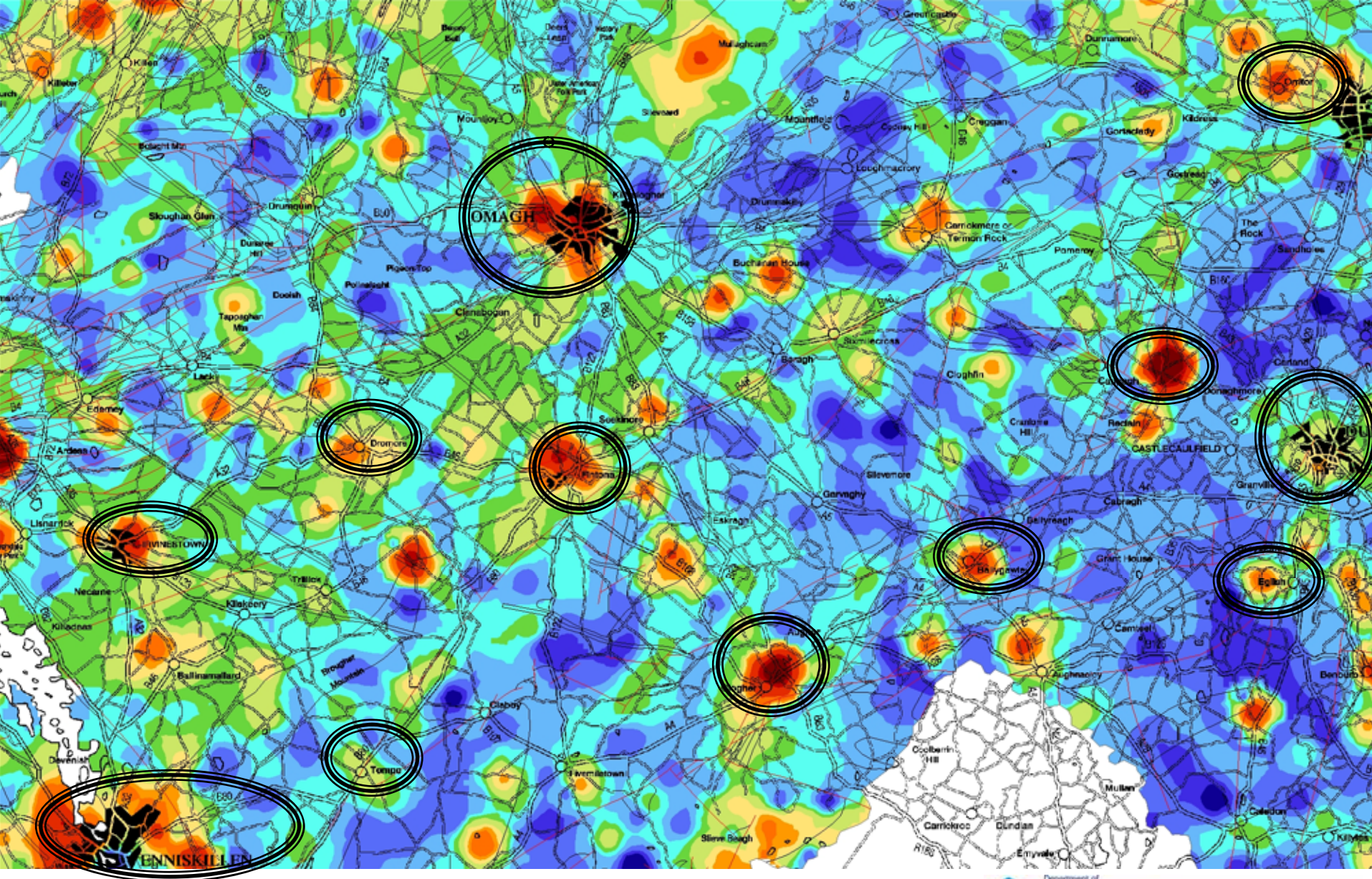


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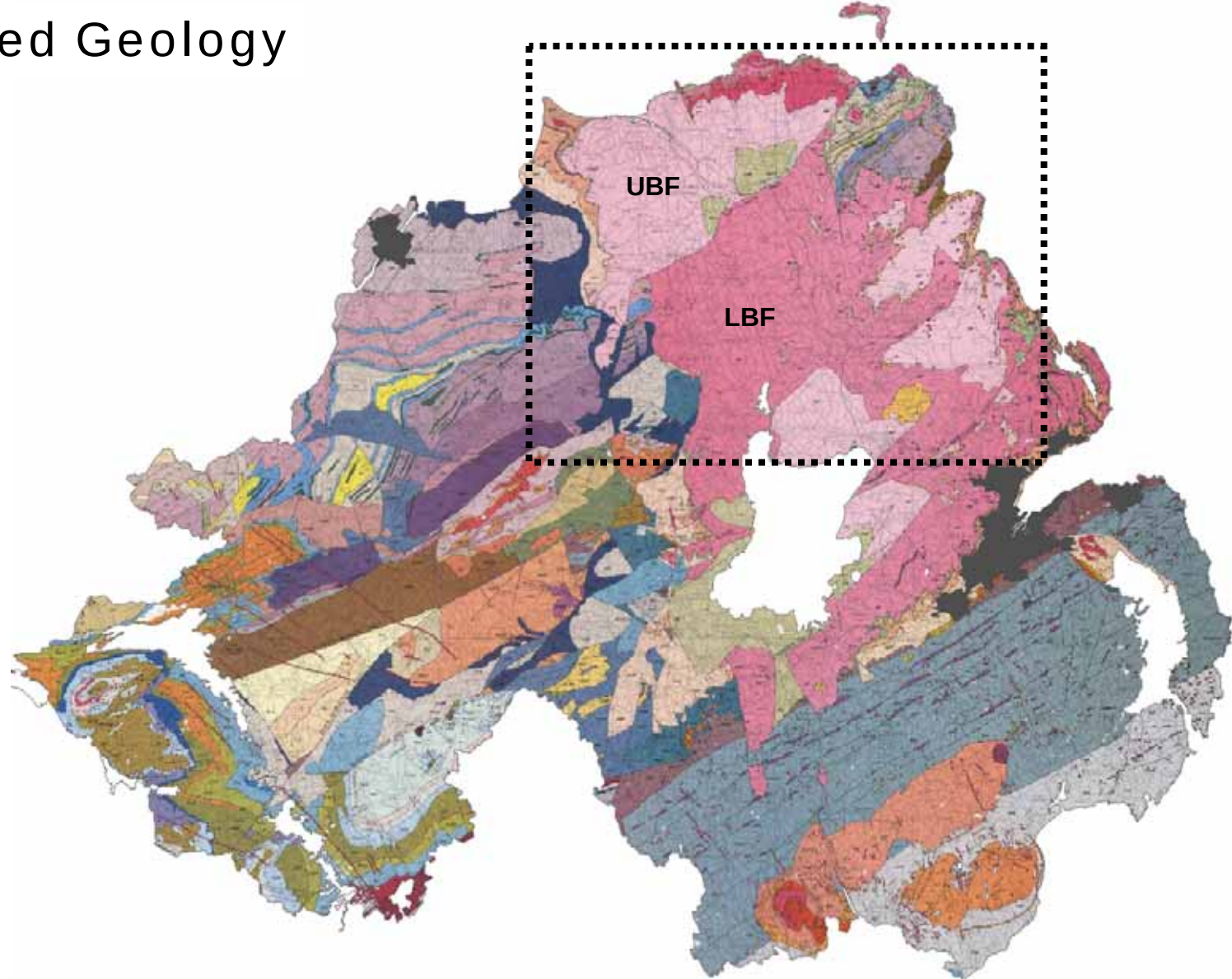
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Mapped Geology



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Basalt Compartmentalisation?

Fe

Ballymoney

Moneyglass

Blackrock Bay

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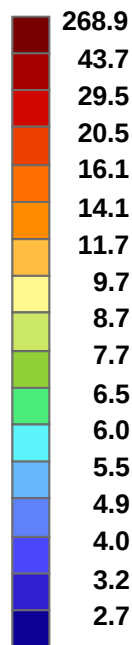


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Arsenic (mg/kg)- Soil

“Surface Soil”
<2mm, 5- 20cm depth
XRF



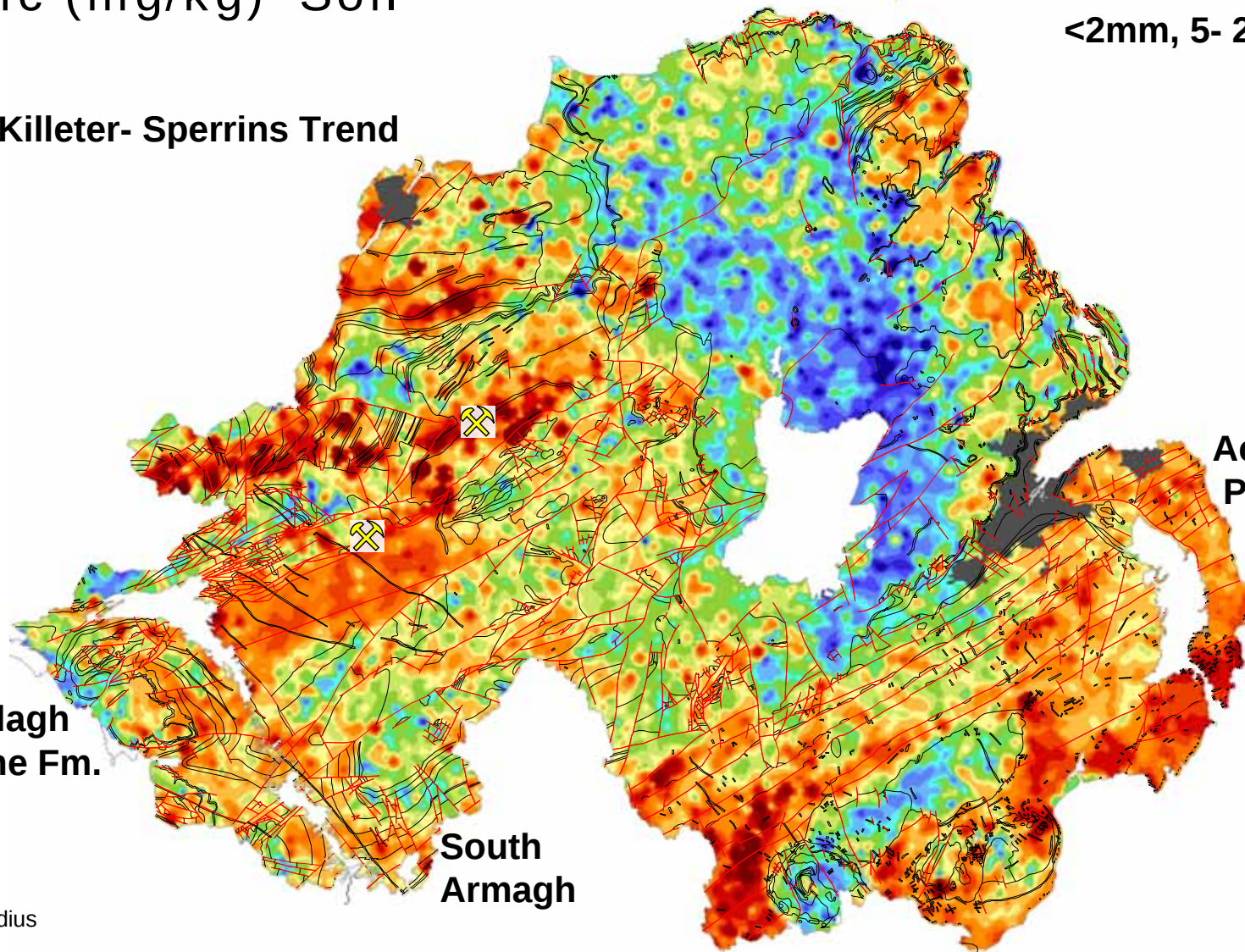
Killeter- Sperrins Trend

**Gala 7+1
Accretionary
Prism Tract**

**Shanmullagh
Sandstone Fm.**

**South
Armagh**

250m Cell size
1500m Fixed radius
IDW method



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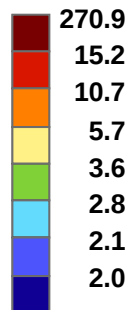


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Gold ($\mu\text{g}/\text{kg}$)- Soil

"Deep Soil"
<2mm, 35- 50cm depth
Fire Assay/ ICP-MS



Upper Basalt Formation

Dalradian
Metasediments

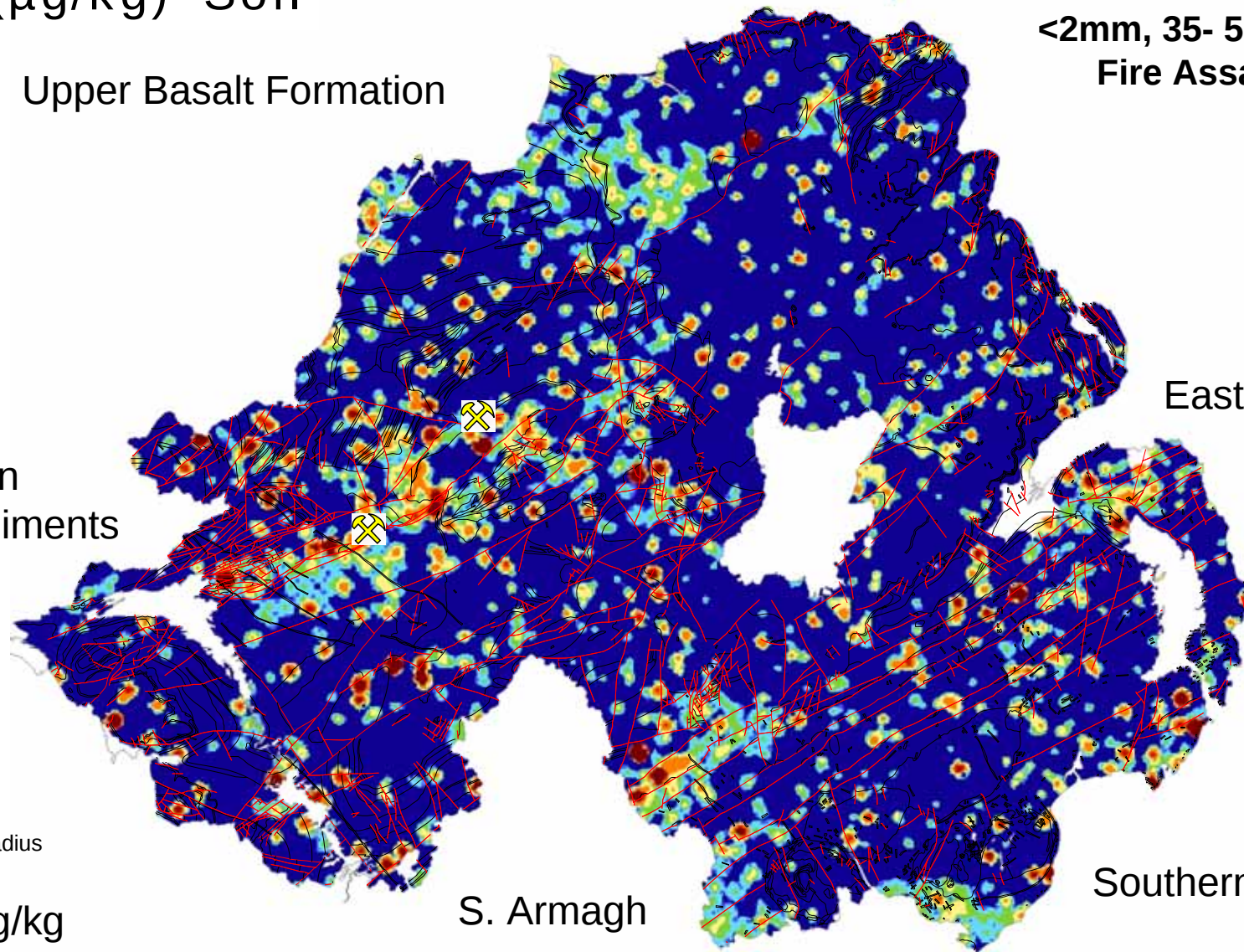
East of Belfast

Southern Mournes

S. Armagh

250m Cell size
1500m Fixed radius
IDW method

DL $2.0\mu\text{g}/\text{kg}$



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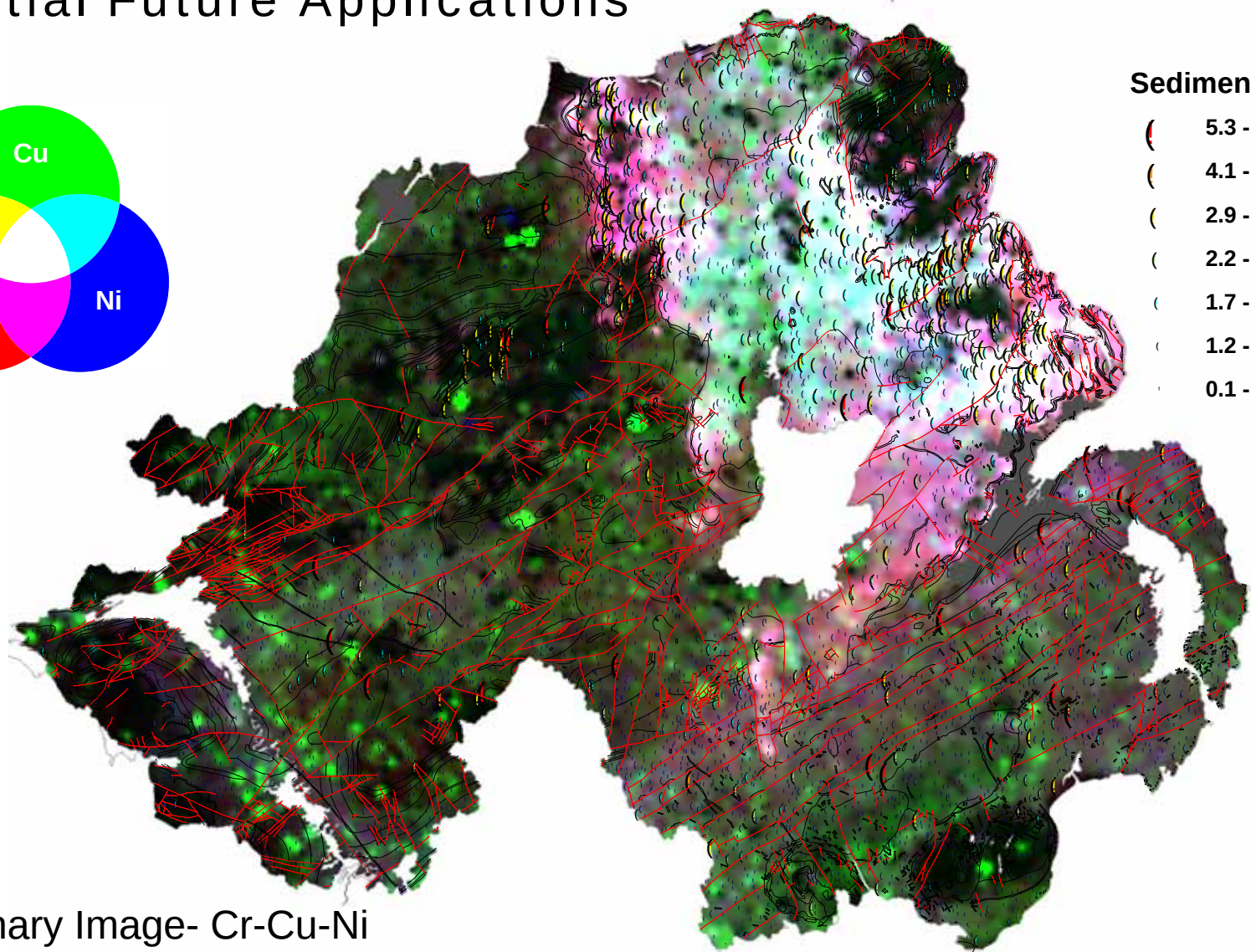
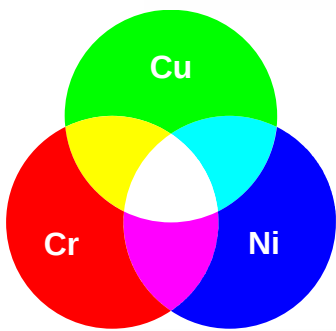
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Potential Future Applications



Sediment Pt ($\mu\text{g/kg}$)	
(	5.3 - 79.6
(	4.1 - 5.2
(	2.9 - 4.0
(	2.2 - 2.8
(	1.7 - 2.1
(	1.2 - 1.6
(	0.1 - 1.1

Soil Ternary Image- Cr-Cu-Ni



Conclusions

Impact of Tellus Geochemistry Datasets for;

- Environmental assessment
- Geological mapping
- Prospectivity assessment/ mineral exploration
- Integration with other datasets



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