

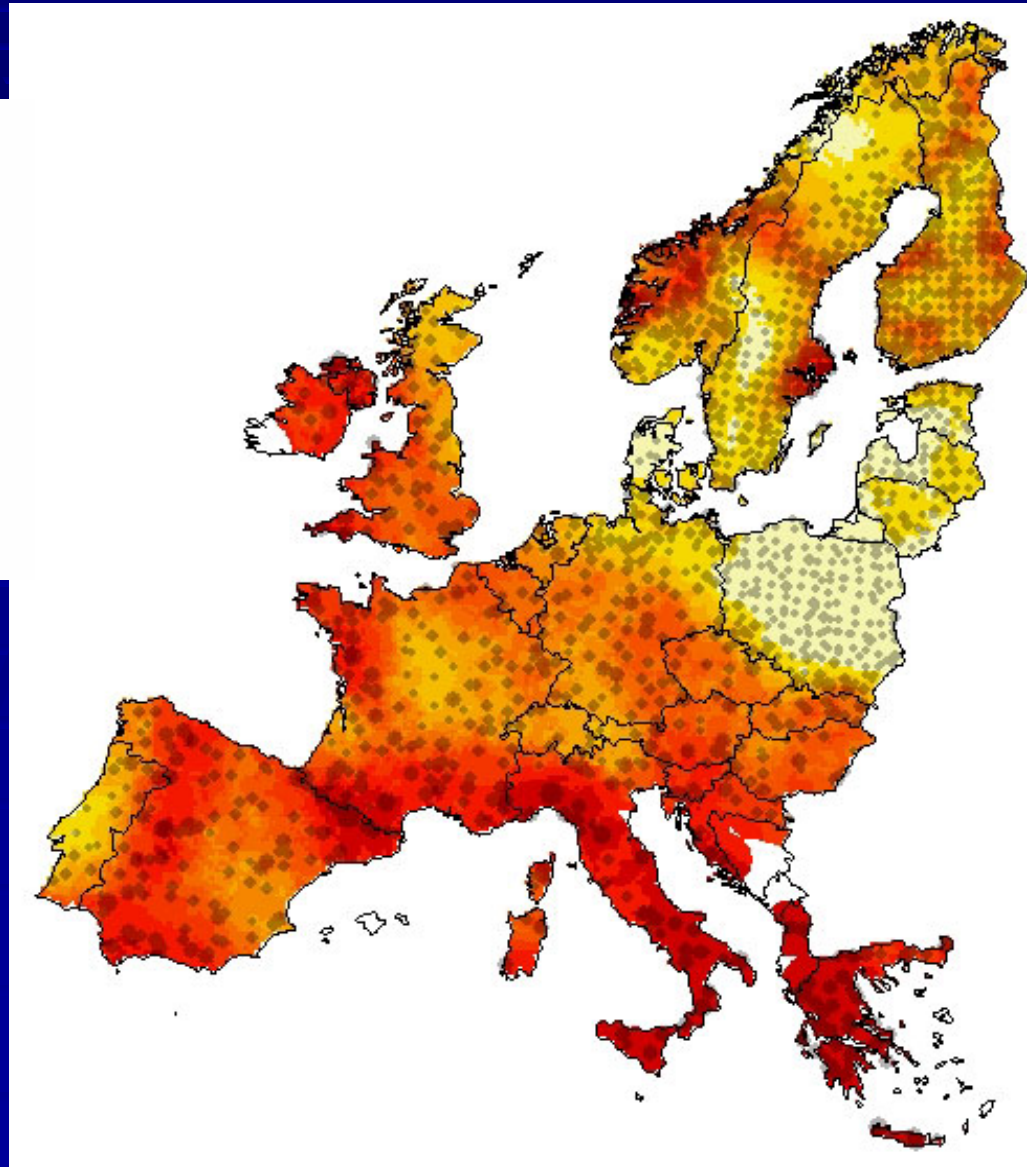
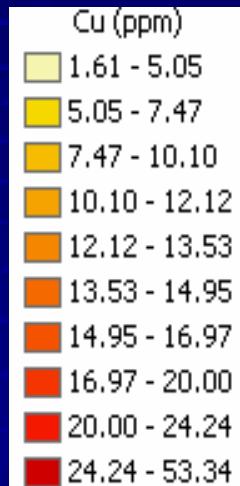
Link between essential trace metals and health

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Geochemical maps of Europe



Reimann et al.,
2003 and Salminen
et al. 2005

Trace metals in food stuffs

- **Soils are being mined for trace metals**
 - This is due to fertilizers only containing K:P:N
 - But NOT trace metals
- **Recent studies show**
 - Trace metal content in meat and vegetation
 - Decreased by over 30-80% in UK

FP7 work needed: viral diseases

- Link soil Se and Zn content with AIDS
 - Preliminary studies in Africa
- Link soil Se and Zn content with Avian flu
 - Preliminary studies in China

FP7 work needed: Metals and neurological diseases

- Trace metal malfunction linked to
 - Prion diseases
 - Parkinson
 - Alzheimer
 - Depression
 - ADD
 - ALS
 - Dementia

Other diseases

- Trace metal deficiency linked to increased
 - Asthma - lack of Se in lungs
 - Allergies - weakened immune system
 - Cancer - lower superoxide dismutase
 - Se enzyme
 - CVD - lack of Se

FP7 research needed

- **Geochemistry**
 - Link regional distribution of soil metals and diseases
 - Bioavailability of trace metals
- **Biochemistry**
 - Metal status and resistance to oxidative stress
 - Effect of metal status in rodents on expression of proteins
 - Molecular basis of metal entry into cells and the effect of disease state on the expression of metal uptake proteins
 - Permissive nature of metal transporting protein
 - Linking of lipome to proteome to metallome
- **Medicine**
 - Assessment of metal status and antioxidant expression in patients with diseases
- **Analytical Chemistry**
 - Determining the speciation of metals in membranes and metabolites
 - Quantifying by new analytical techniques