In these active catchments there was a high number of adjustments. Example of output of analysis (step 3 of method). The data shows slope ranges for adjustments in second and fourth order channels.

A: – B: example of output of analysis (step 3 of method). The data shows slope ranges for adjustments in second and fourth order channels.

C: Mean valley bottom width at boundary adjustments for each catchment.

% of total channel length adjusting or stable 1860s – 2010 by catchment

• The highest percentage of adjusting channels were observed in the Ennerdale and Wasdale catchments for 1860s – 2010 period

• In these active catchments there was a high proportion of channel adjustments, relating to adjustment type, length and geomorphic characteristics

GEOMORPHIC CHARACTERISTICS

Crummock
Wasdale
Esk
Duddon
Coniston
Windermere
Kent
Ullswater
Sleddale
Swindale
Haweswater
Cawdale
Keswick
Ulswater
Caldew
Bassenthwaite

1860s – 2010 pattern of adjustment

% of total channel length adjusting or stable by time period

• 270 river units studied (total length 600 km)
• 17 catchments (8 – 62.5 km²)
• River slope 0.001 – 0.7

SPATIAL & TEMPORAL PATTERNS OF ADJUSTMENT

GIS APPROACH

1. DTM (5m, Edina Digimap)
3. Historic maps (1860s, 1950s, 1980s: OS 1:25 000)

INPUT

1. Map the type of planform adjustment (i.e bend adjustment, boundary adjustments)
2. Identify channel & catchment characteristics (i.e slope, stream power, valley width, stream order)
3. Relate adjustment type to channel and catchment characteristics

OUTPUT

1. Maps showing spatial patterns of planform adjustments over time
2. Data tables – quantitative variables relating to adjustment type, length and geomorphic characteristics

SUMMARY

1. Approach allows channel adjustments to be placed in historical and spatial context.
2. Regional variability was observed in the % of channel length affected by planform adjustments. Active catchments identified include: Ennerdale, Wasdale and relatively stable catchments include: Haweswater over 150 year time period
3. Further analysis involves exploring the relationships between catchment & reach scale geomorphic characteristics