

Hyperspectral satellite imaging

Linus Falk¹

¹*Digital imaging systems - 1MD130*

I. INTRODUCTION

- Spectroscopy of reflected light from earth surface
 - Passive technique
 - Materials characterized by spectral signature (Absorption and reflection)
 - Acquires images in many spectral bands so for each pixel a reflectance spectrum can be derived
 - Important absorption features occur in the 400-2500 nm band (reflected solar radiation dominates natural EMS)

I. INTRODUCTION

- Hyperspectral imaging used in many fields
 - Ecosystem processes
 - Surface mineralogy
 - Water quality
 - Soil type and erosion,
 - vegetation type and more...

I. BRIEF HISTORY

- +30 Years of hyperspectral satellite imaging
 - Landsat-1 - **1972 NASA/JPL** (multispectral)
 - * Portable field reflectance spectrometers developed
 - For a long time was the spectral regions with atmospheric absorption seen as drawback
 - Better algorithms and hardware made it possible to correct for this
 - First commercial hyperspectral imaging systems for airborne use (DAIS 1989)
 - Hyperion - **2000 NASA**
 - EnMAP - **2022 DLR**

I. USE TODAY & LIMITING FACTORS

- Used in research
- Drawbacks
 - Not easy to deploy

II. REFERENCES
