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Incorporating Animation into your Analysis and Presentation

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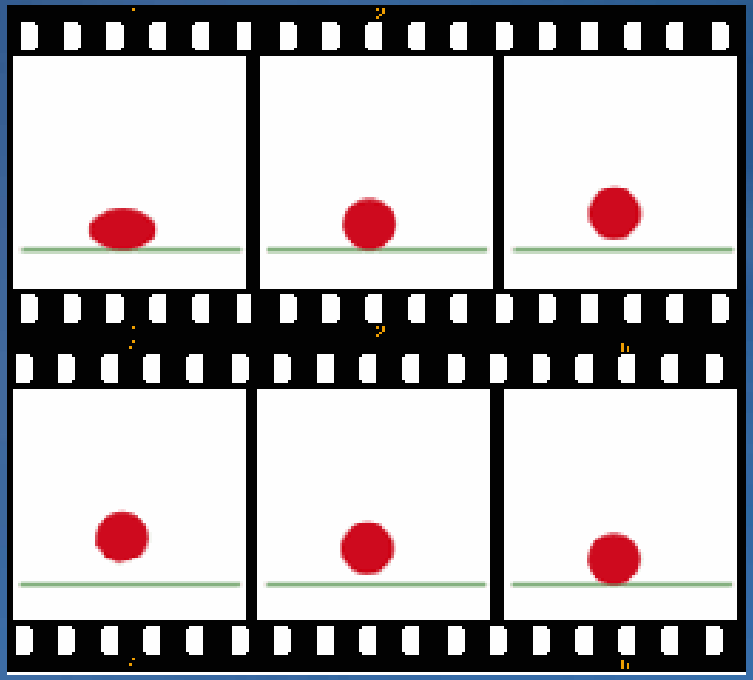
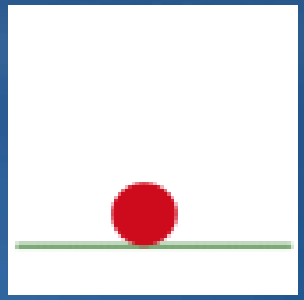
Content

- What is Animation
- What is ArcGIS animation
- What can be Animated
- Animation concepts
- Building blocks of an animation
- Creating an animation
  - Animation toolbar
- Animation manager
  - Animation controls
- Saving, sharing and exporting animation
- Animation examples

What is an animation?

- **The rapid display of a sequence of 2-D or 3-D images in order to create an illusion of movement**
  - **Visualize how data changes with time and space**





Bouncing ball animation made up of 6 frames

ArcGIS Animation

- Used to:
  - Visualize changes to layer properties
    - Changes in perspective
    - Changes in document properties
    - Geographic movements
    - Temporal changes
    - Patterns in data through time
  - Store actions to be replayed
  - Create simple and complex dynamic effects
  - Automate the process of effective demonstration and visualization of data
- Core ArcMap functionality - no extension
- ArcGlobe and ArcScene - 3D Analyst extension

What can be Animated?

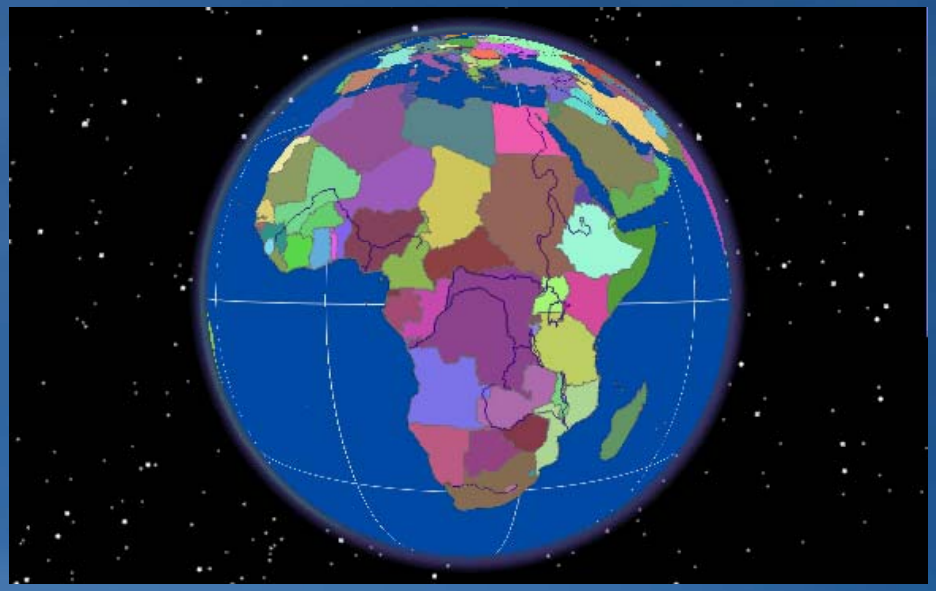
- The view
  - Pan and zoom, move the camera or view
- Layer properties
  - Move a layer, change transparency, group animation
- Scene properties
  - Modify background color, exaggerate the terrain
- Time series
  - Feature class, Raster catalog

Let’s take a look at some examples

- **ArcMap Animations**
  - Map View Animation
  - Map Layer Animation
  - Time Layer Animation
- **ArcScene Animations**
  - Camera Animation
  - Layer Animation
  - Scene Animation
- **ArcGlobe Animations**
  - Globe Camera Animation
  - Globe Layer Animation

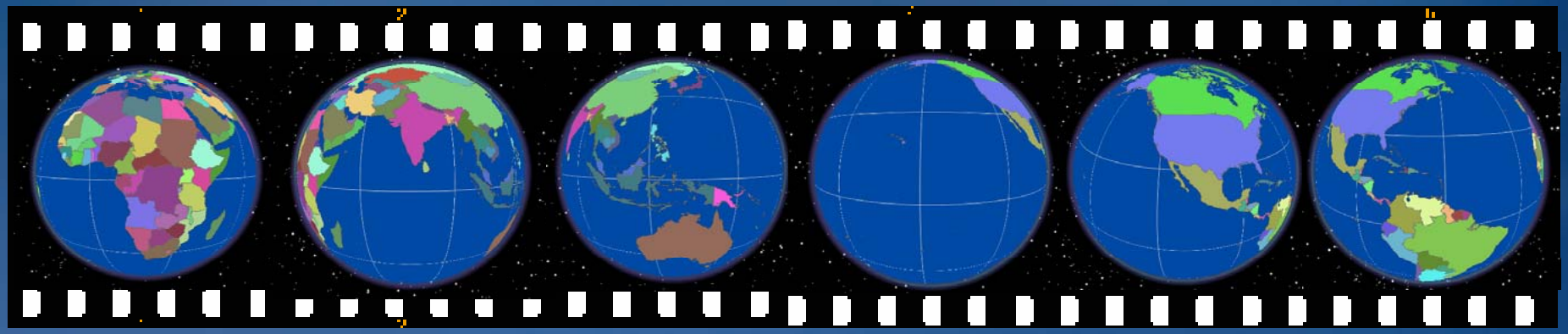
Basic Animation Concepts

- **Animation**
  - **The rapid display of a sequence of 2-D or 3-D images in order to create an illusion of movement**
    - **Visualize how data changes with time and space**
  - **Consists of : one or more Tracks executed in parallel**
  - **Similar or different types of tracks can be played together**

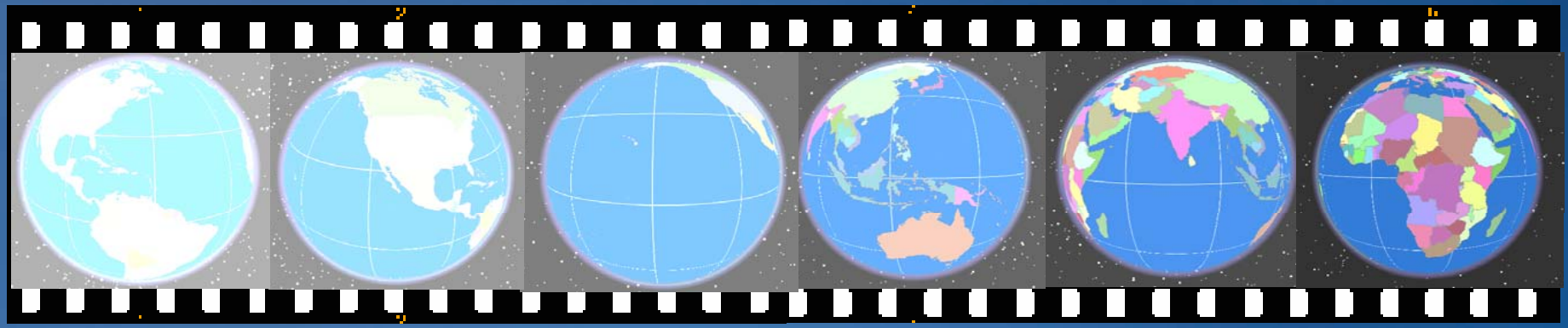


Basic Animation Concepts

- Animation Track
  - –Collection of keyframes of the same type
  - –Each track - bound to one or more objects and describe their behavior over animation time



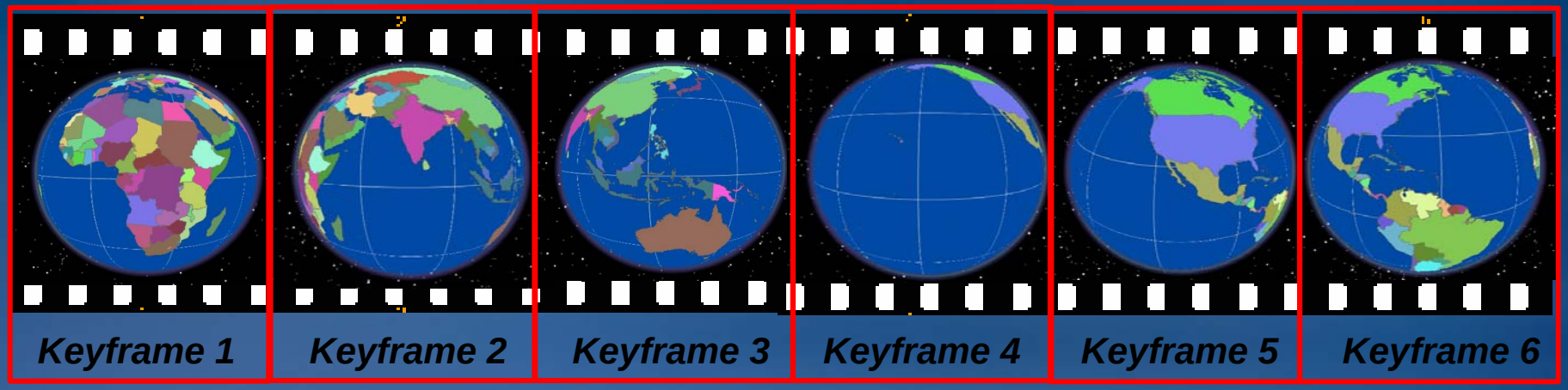
Animation Track – *A1*



Animation Track – *A2*

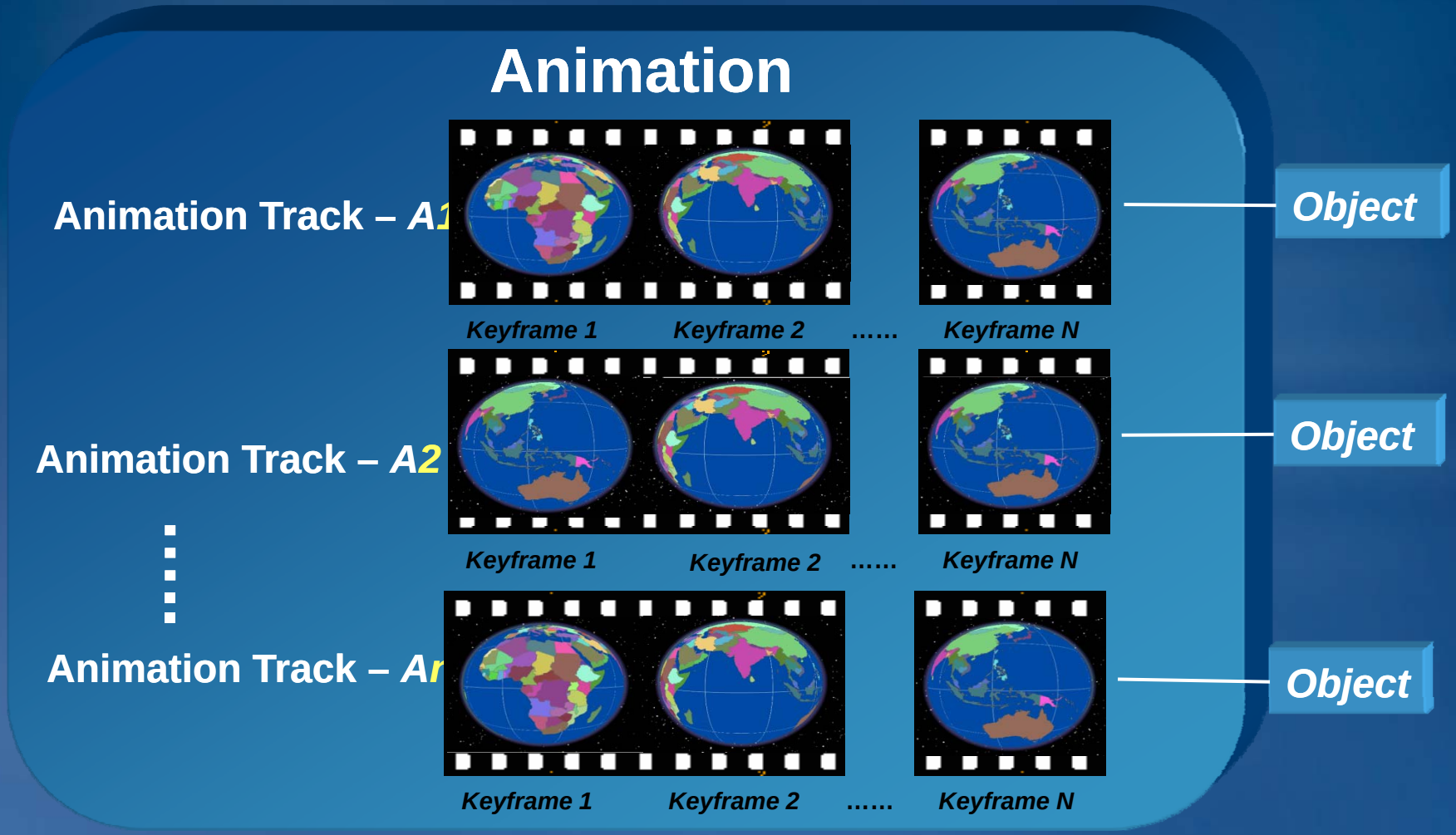
Basic Animation Concepts

- **Keyframe**
  - –Snapshot of an object's properties at a certain time



  - –Objects can be -
    - Camera, Layer, Scene, Map View and Time Layer

Building blocks of an animation



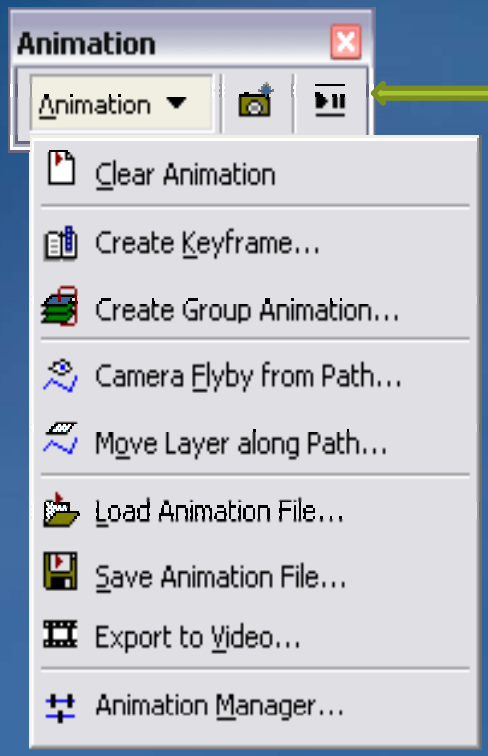
Object – Camera, Layer, Scene, Map View, and Time Layer

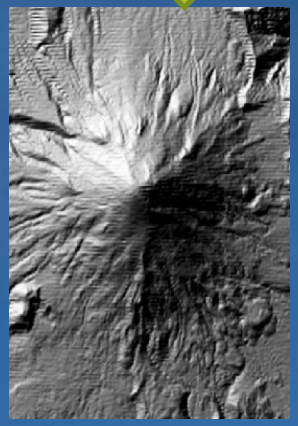
Creating Animations

Simple	Build animations from keyframes	• Capture current view to animation • Record and play a flyby
	Build animations from paths	• Create flyby using flight paths • Move layers along a path (Scene)
	Create Group Layer animations	•Toggling layers on and off
	Time layer animations	•Temporal visualization
Advanced	Manipulate object properties	• Use the Animation Manager • Edit keyframe and track properties
	ArcObjects customization	•Animate objects

Tools used to create animation

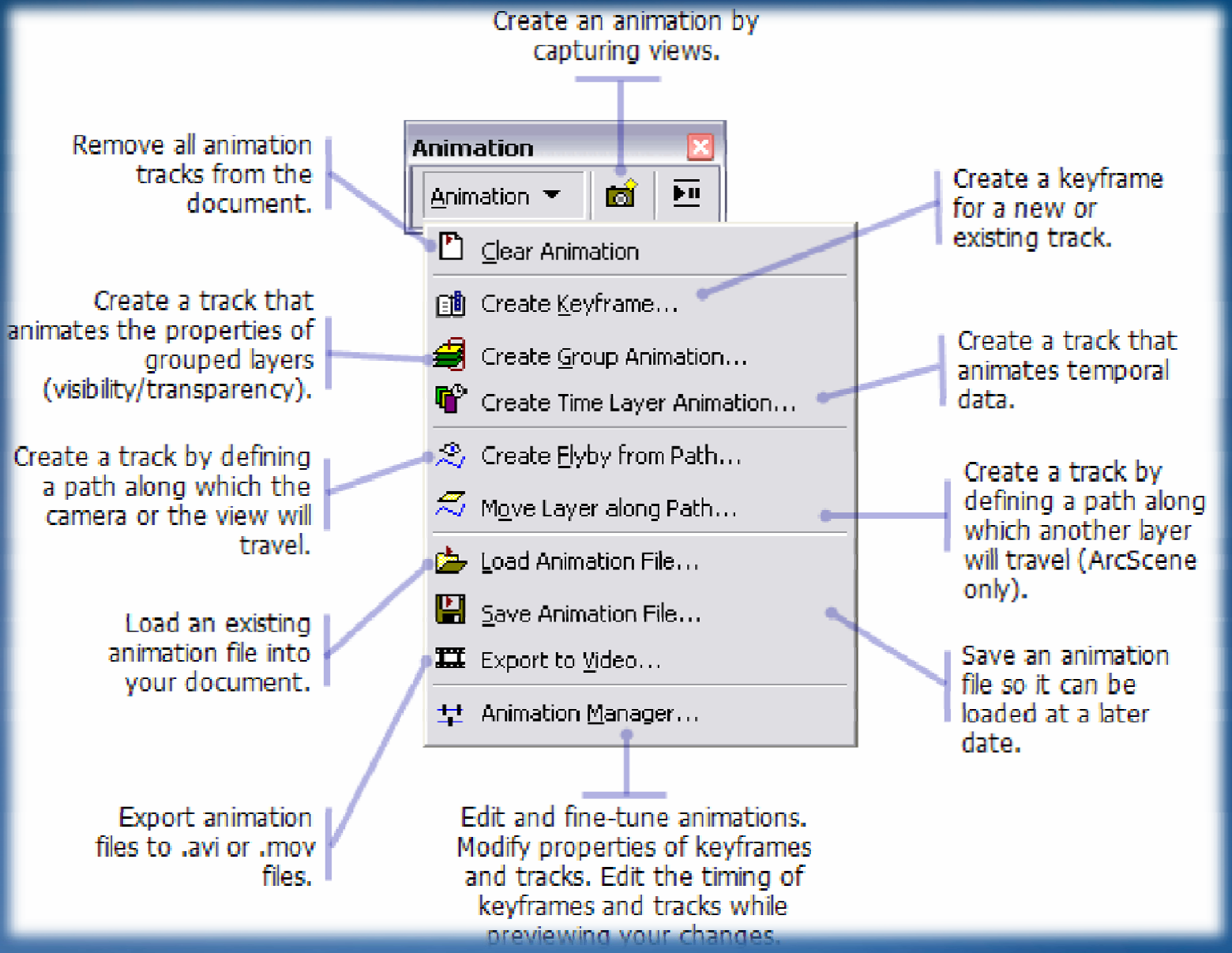
- Animation toolbar
- Create, Load, Manage, Play, Save, Export
  - AVI, MOV, ASA, AGA





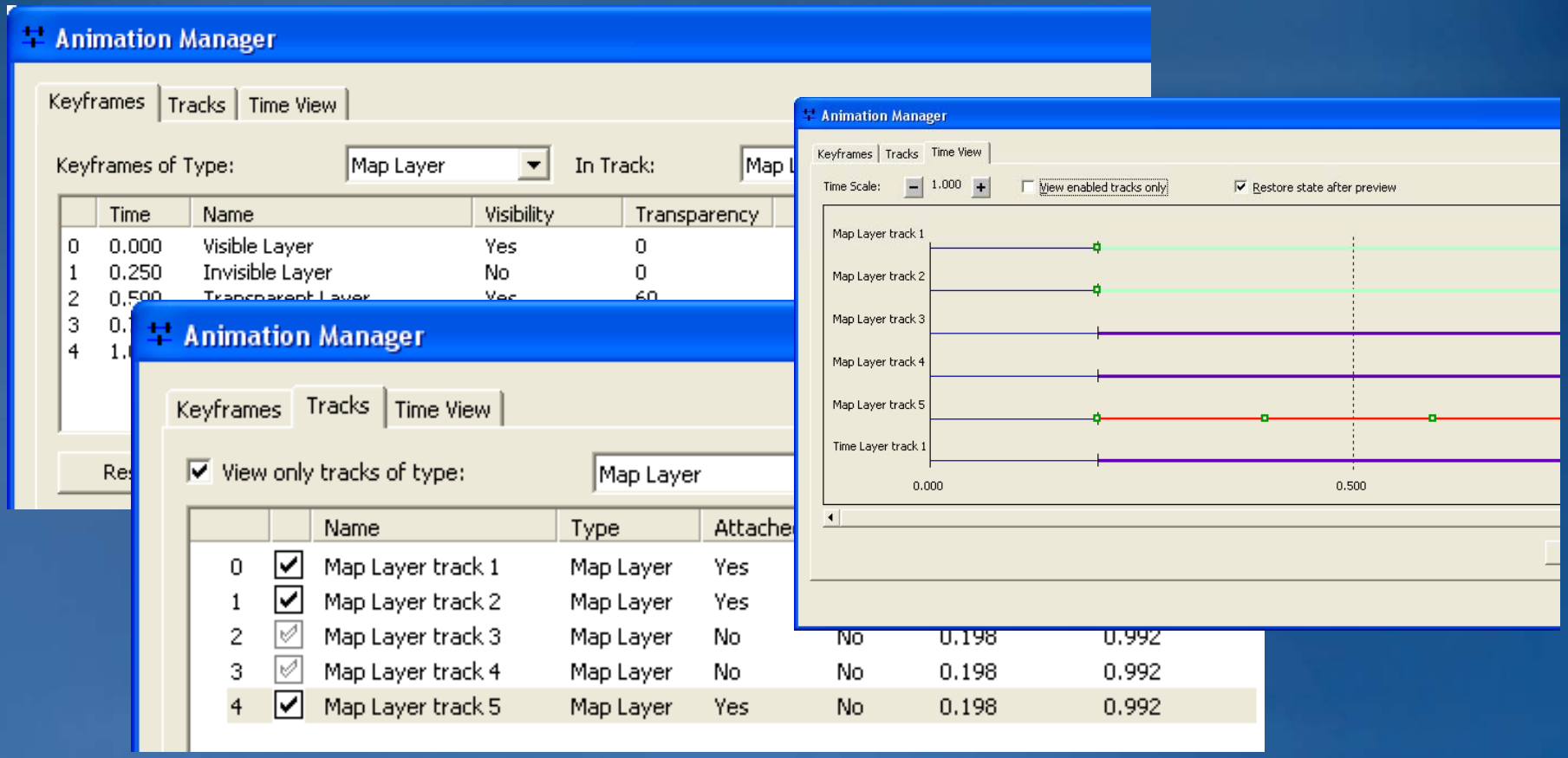
Capture the current view to an animation

Animation toolbar

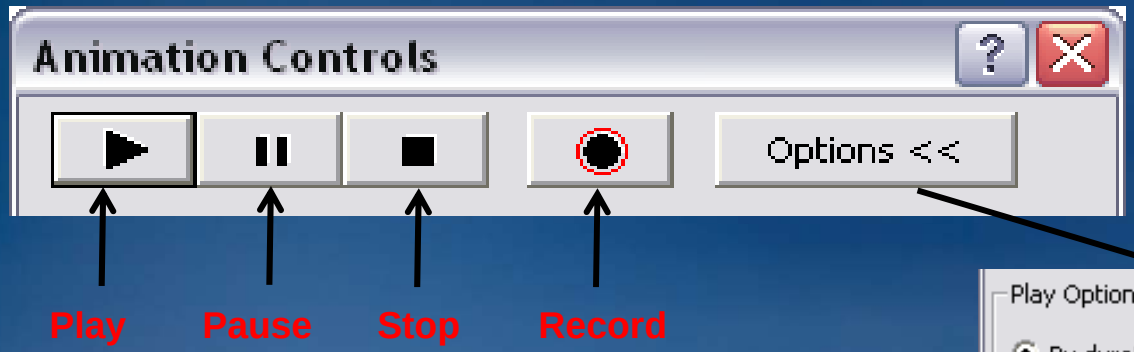


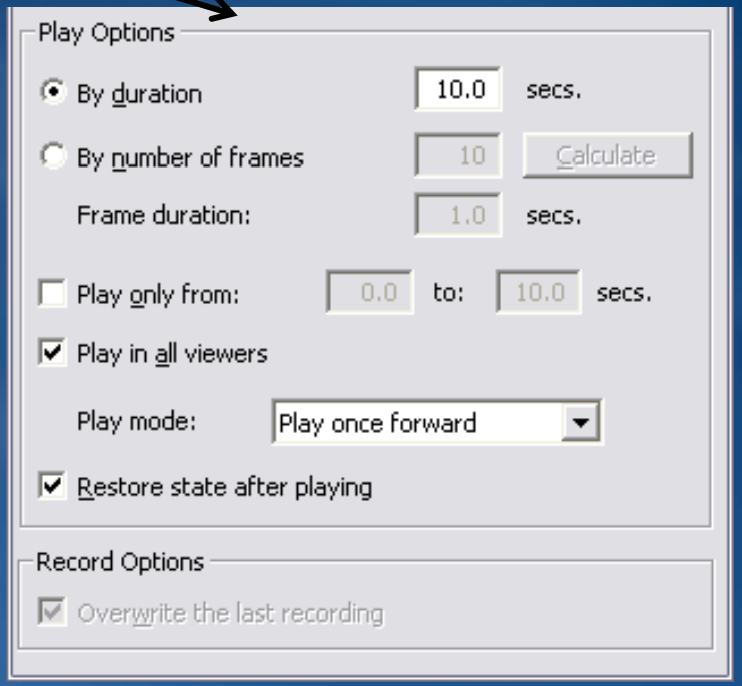
Animation Manager

- **Organizes and manages**
  - **Tracks and Keyframes**
  - **Arranges the animation timeline**



Playing Animations





- Two ways:
  - Animation Controls dialog box
  - Manually ,use Time View slider
- Play options:
  - Duration (speed)
  - Number of frames to display
  - Play portions
- Looping options
  - Play once forward
  - Play once reverse
  - Loop forward
  - Loop forward and reverse
- Restore state after playing

Saving and Sharing Animations

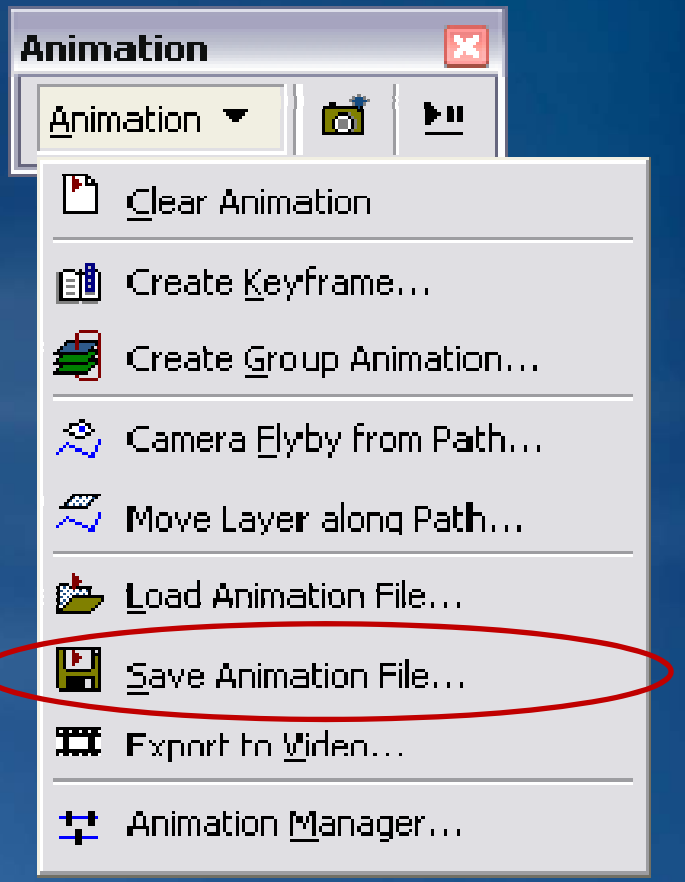
- **Save in:**

  .mxd, .sxd, .3dd

  or

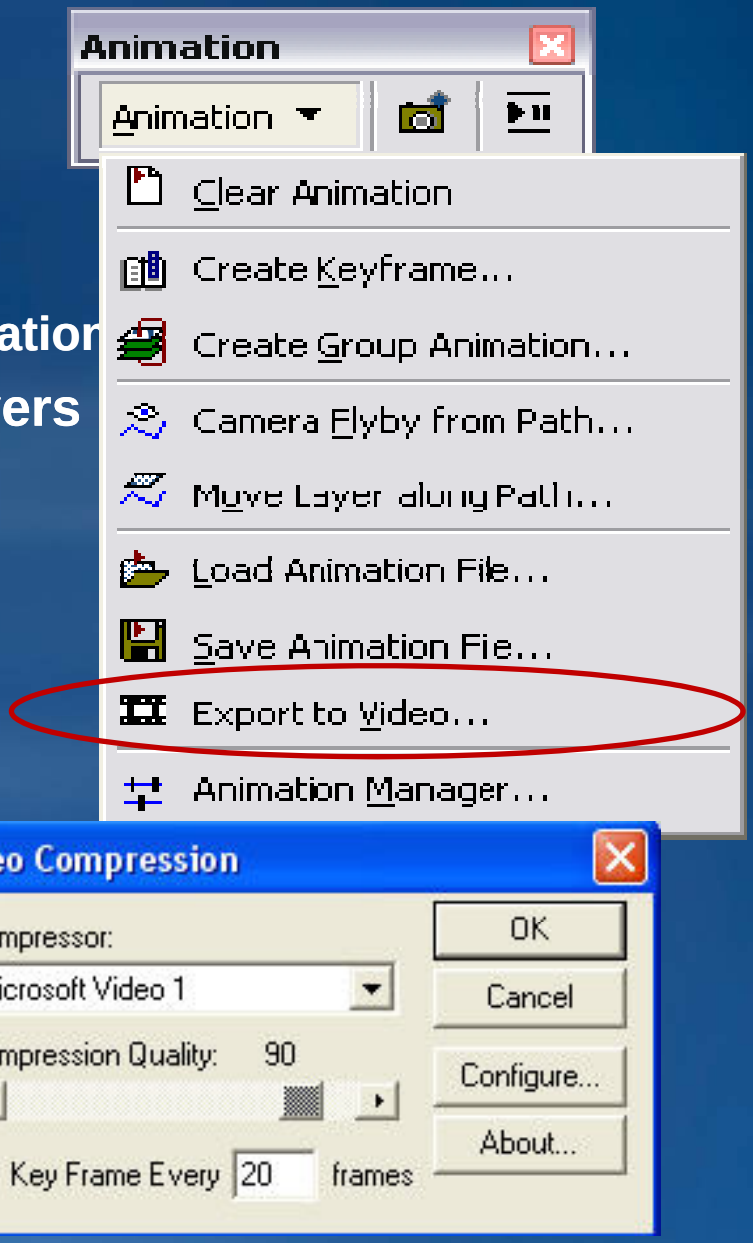
  .ama, .asa, or .aga file

- **Reusable**
  - **Same or different document**
  - **TOC should contain the same data for Layer and Time animation**



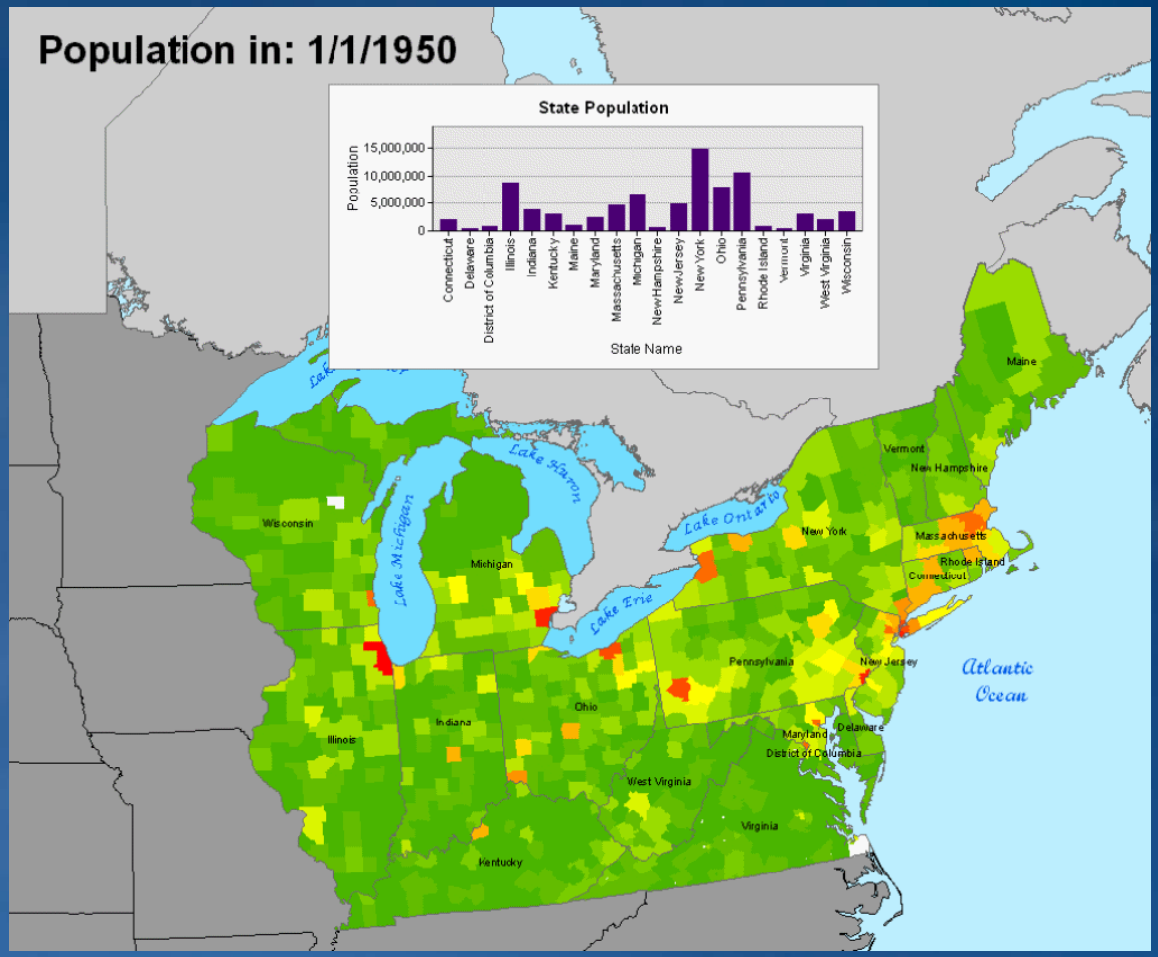
Exporting Animations

- Formats supported
  - .avi, .mov
- Compression properties
  - Quality, frames per second, frame duration
- Compatible with standard media players
- Distortion-free custom videos



Example: Animation in ArcMap

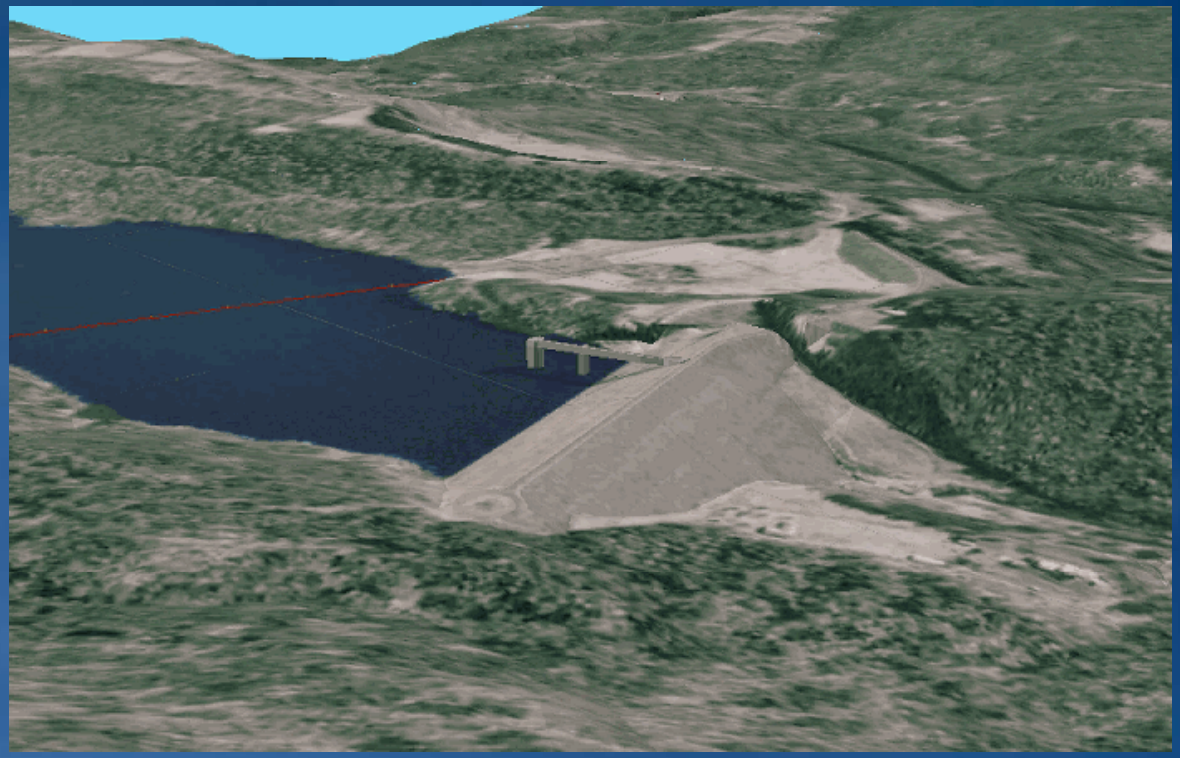
- Map View Animation
  - View Extent
- Map Layer Animation
  - Visibility
  - Transparency



Courtesy: U.S. Census

Example: Animation in ArcScene

- Camera Animation
  - Observer
  - Target
  - View Angle
- Layer Animation
  - Visibility
  - Transparency
  - Translation
- Scene Animation
  - Vertical Exaggeration
  - Sun Azimuth

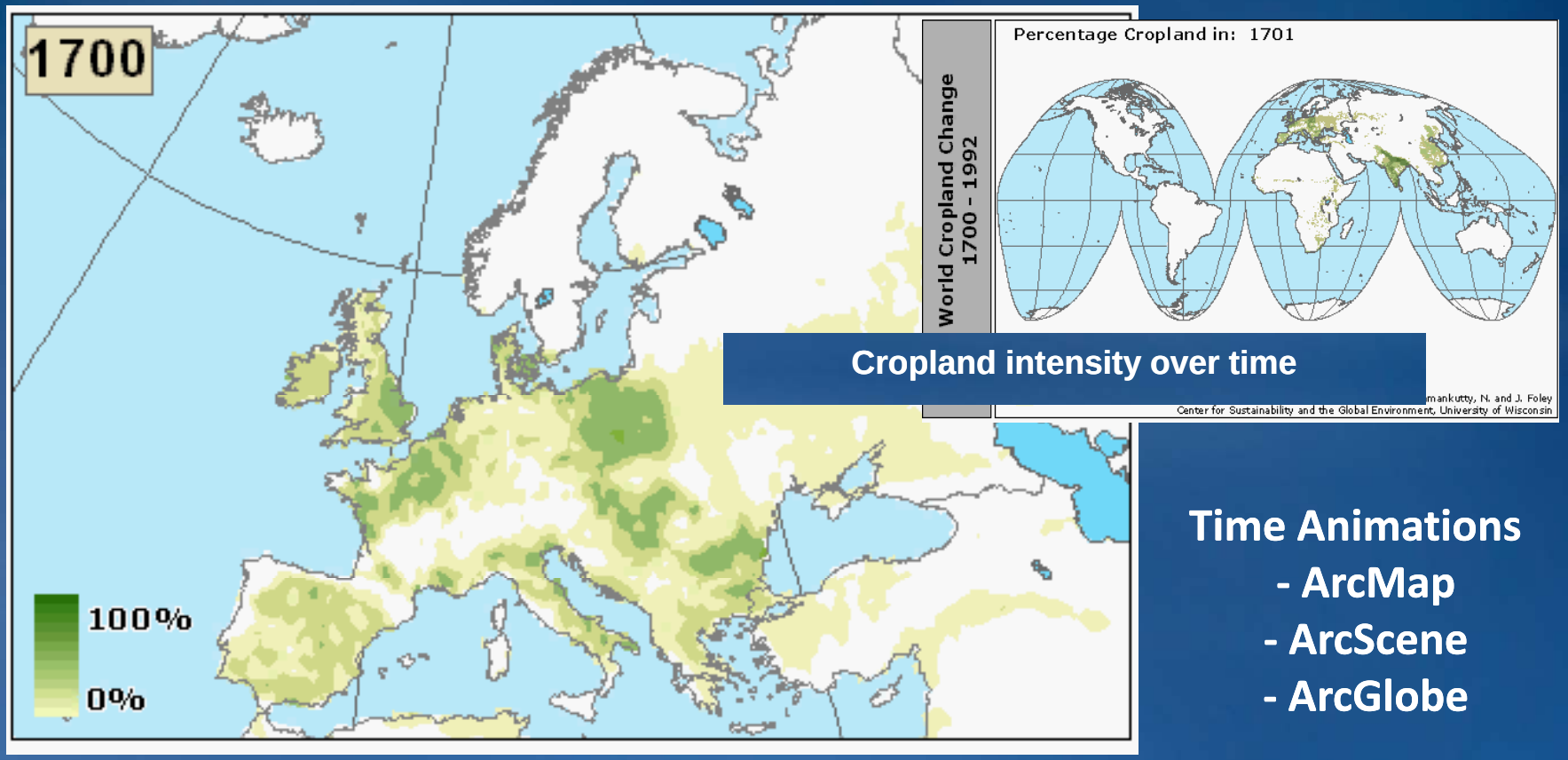


Example: Animation in ArcGlobe

- Camera Animation
  - Navigation mode
  - Target
  - View Angle
- Layer Animation
  - Visibility
  - Transparency

Example: Animation through time

Sequential display of data with time stamps

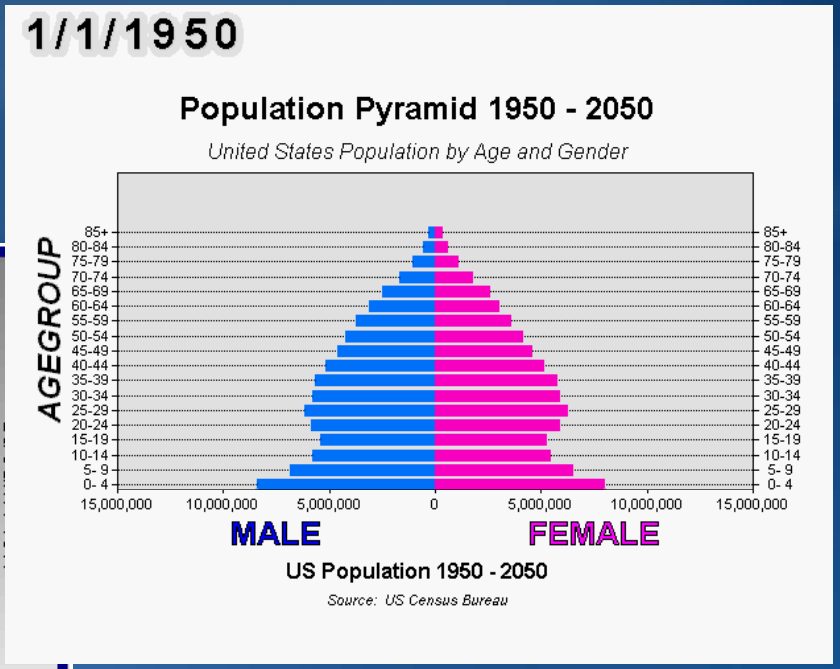


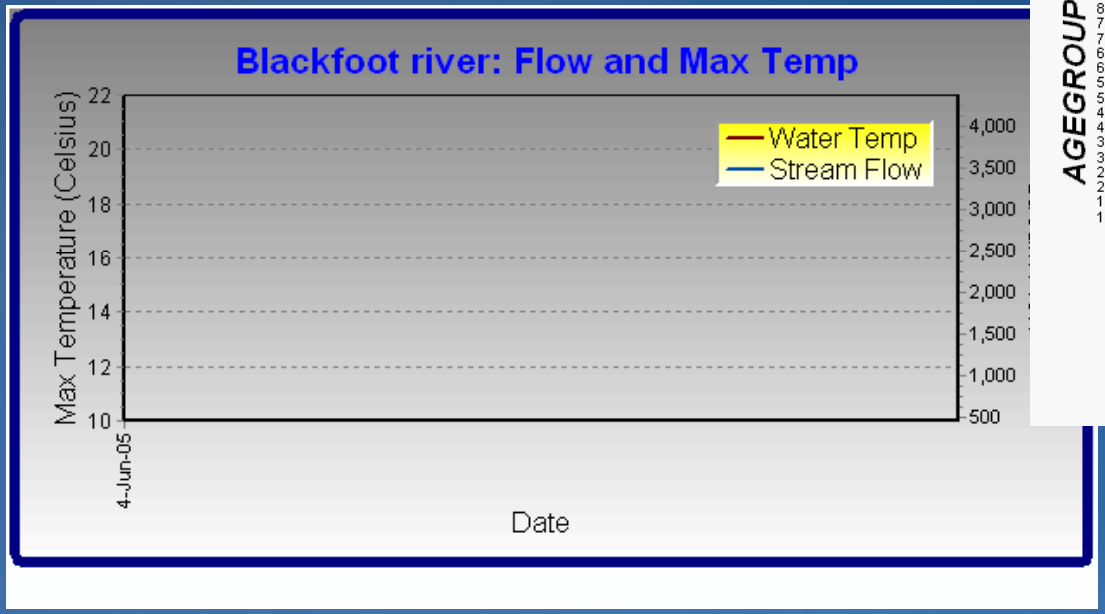
Time Animations
- ArcMap
- ArcScene
- ArcGlobe

Courtesy: NetCDF Data Source: Ramankutty, N. and Foley, J. Center for Sustainability and the Global Environment, University of Wisconsin

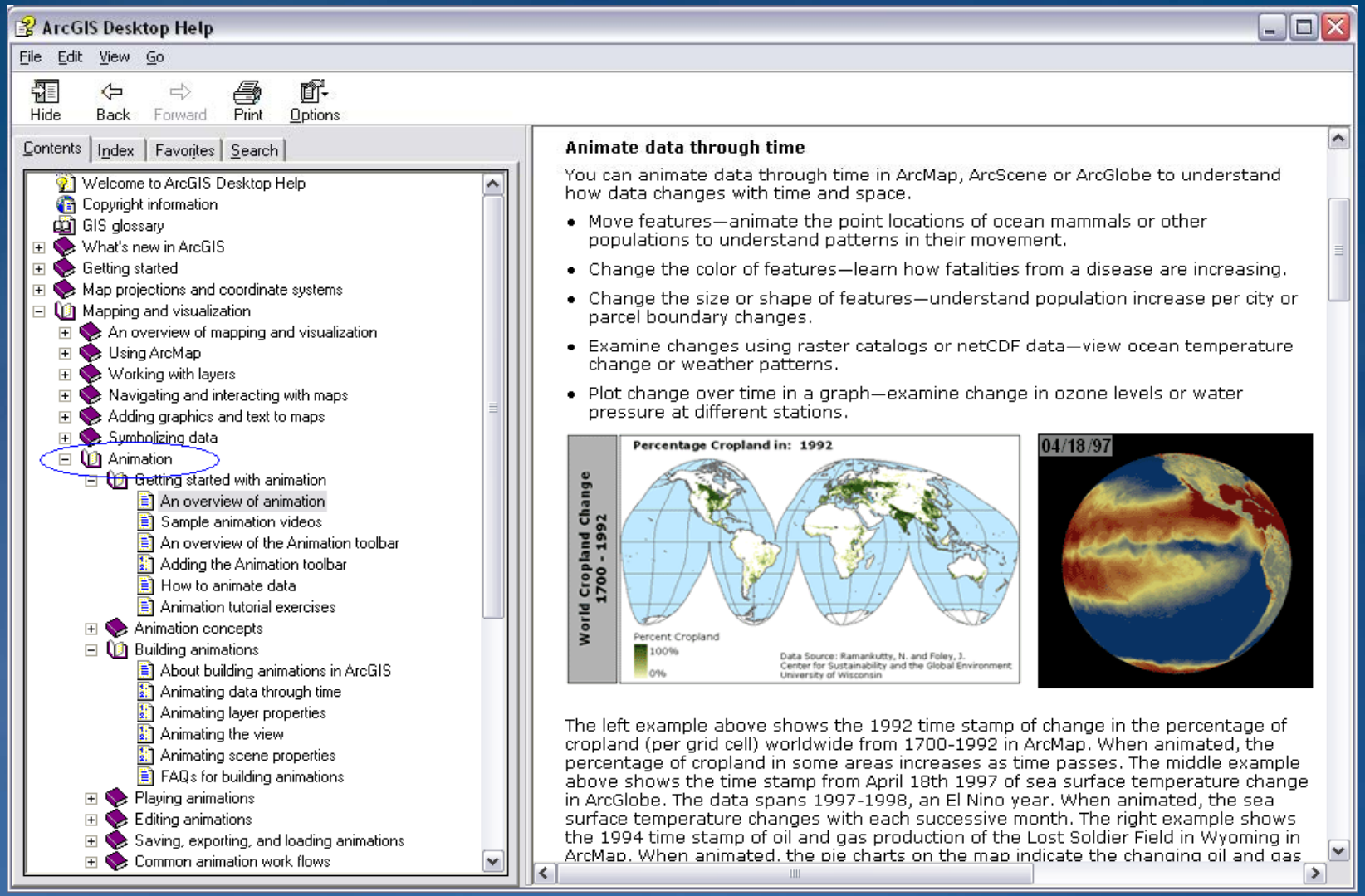
Animating data in graphs

- *Create a graph using a layer or table*
- Create an animation in the usual way, attaching the layer or table to a time layer track
- When the animation is played, the graph will animate





Location of Animation Help



ArcGIS Desktop Help > Mapping and Visualization >Animation

Open to questions