

Light effects, Fog



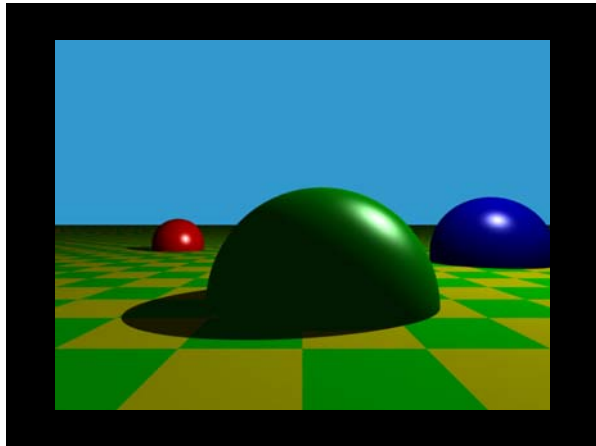
Fog

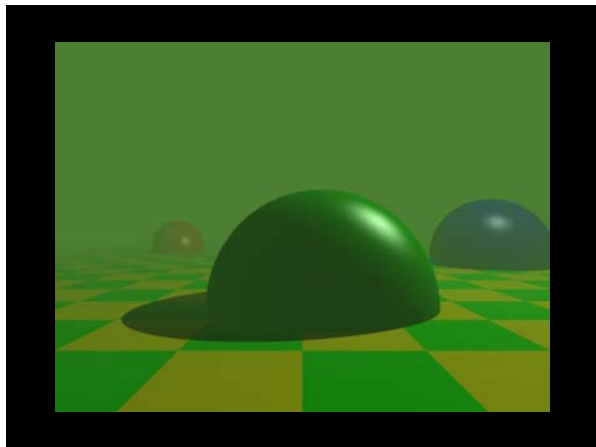
- Distance
 - 36.8% of the background still visible
- Color
 - `rgba <0, 1, 0, .4>`
 - 40% of light filtered through `<0,1,0>`
 - 60% of original light passes through unfiltered (original values)

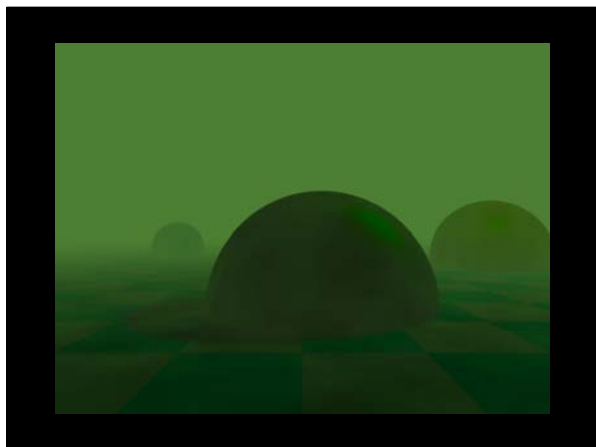


```
fog { distance 150
      color rgba <0.3, 0.5, 0.2, 1.0>
      turbulence 0.2
      turb_depth 0.3 }
```







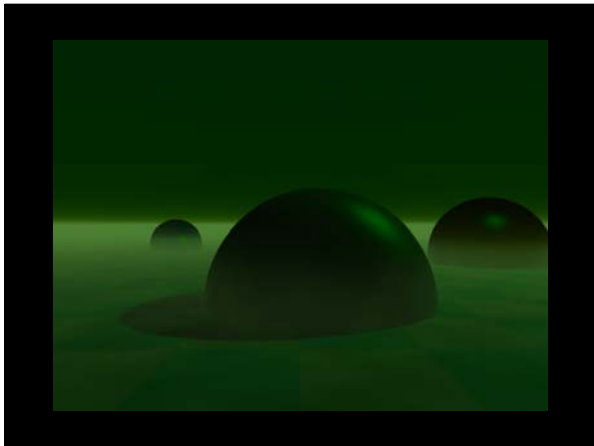


Ground Fog



- fog_type 2 // ground fog
- fog_offset 10 //constant density below offset
- fog_alt 4 //rate at which fog fades above offset


```
fog {  
  distance 150  
  color rgbf<0.3, 0.5, 0.2, 1.55>  
  turbulence 0.2  
  turb_depth 0.3  
  fog_type 2  
  fog_offset 10  
  fog_alt 4  
}
```

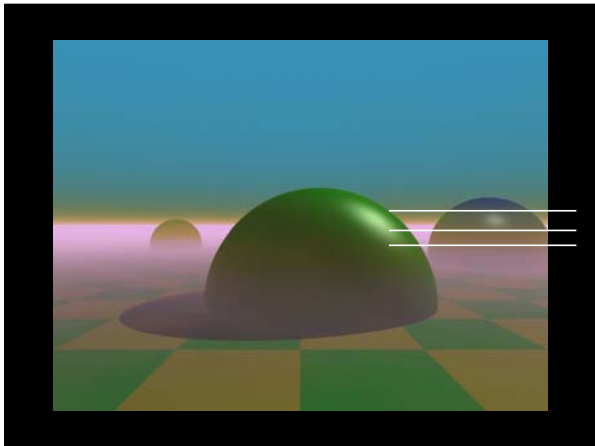




Layered Fog

- Can declare more than one type of fog
- All will participate





Light and media



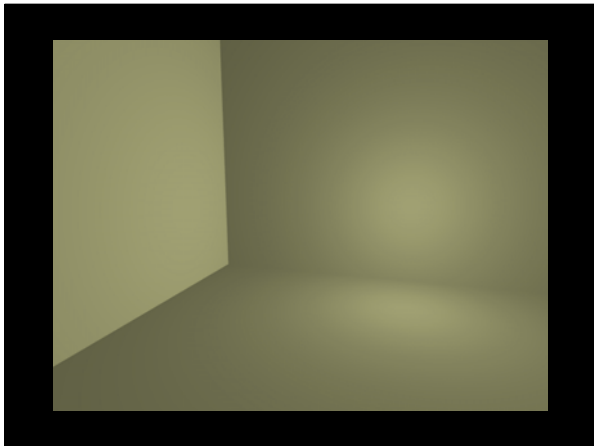
Interior

- Media
- Emission
- Absorption
- Scattering

Lights are invisible



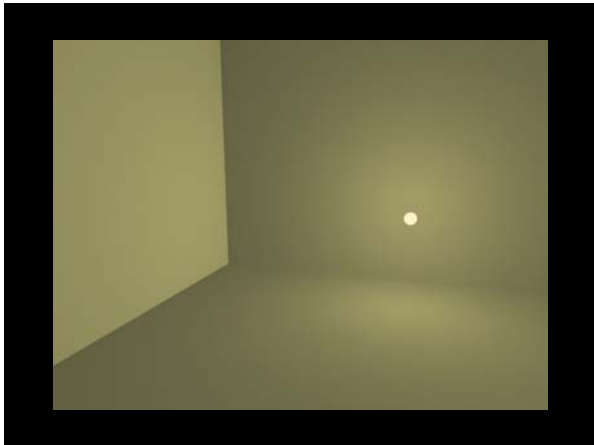
```
light_source {<3,4,2>  
  color White  
}
```



Making the light visible



```
light_source {<3,4,2>
  color rgb <1,.95,.8>
  looks_like {
    sphere { <0,0,0>,0.2
      pigment {color <1,.95,.8> }
      finish { ambient 1 }
    }
  }
}
```



Glow



- Hollow
- Media
 - Inside interior statement

Media



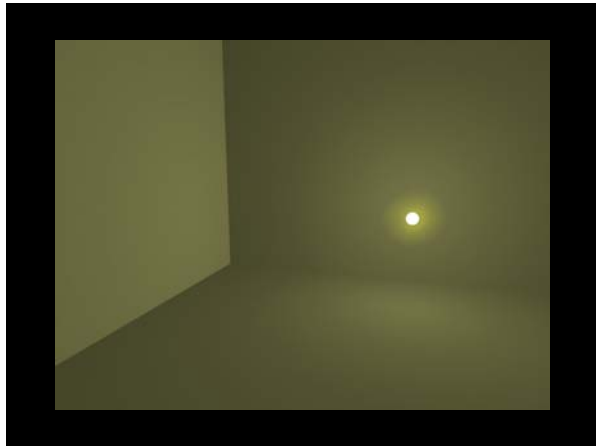
- Emitting
- Absorbing
- Scattering

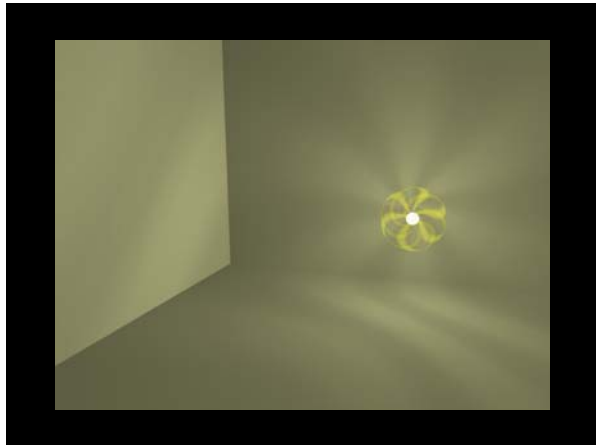
Emitting example



- “Emits” light (not really, more like ambient)
- Uses Density
 - Pattern (spherical, wood, etc.)
 - Density_map

```
sphere { 0,1 pigment { rgbt 1 } hollow
  interior
  { media
    { emission .4
      density
      { spherical density_map
        { [0 rgb 0]
          [0.5 rgb <.2,0,0>]
          [0.75 rgb <.5,0,0>]
          [0.8 rgb 0]
          [1 rgb 0]
        }
        turbulence .2 octaves 1
      }
    }
  }
}
```





Scattering



- Light interacts with media
- Objects can cast shadows into media
- Statement:

```
media {  
  scattering {<type> <color> <extinction>  
    [ samples <min> <max> ]  
}
```

Scattering



- Types

- 1 Isotropic
- 2,3 Mie haze, Mie murky
- 4 Rayleigh
- 5 Henyey-Greenstein

Scattering



- Extinction

- How fast the scattering media absorbs light
- Useful when the media appears too dark or dense

Samples

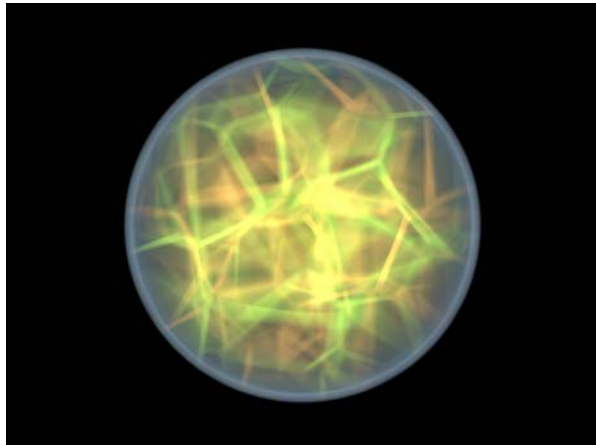


intervals n
samples min max

From the POV-Ray 3.6 release

micro.pov
Emission, Scattering, Density





Scattering Example

- Lights and Camera
- Room
- Scattering Media

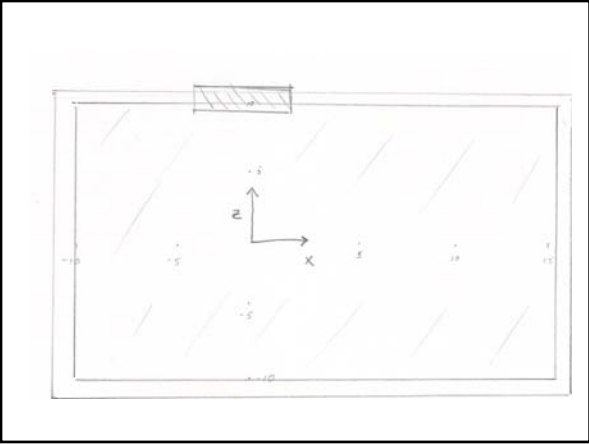


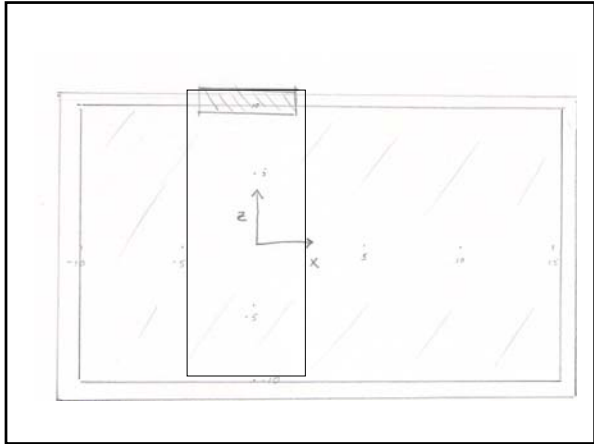
```
global_settings { assumed_gamma 1 }

camera { location <14.9, 1, -8>
  look_at -z
  angle 70 }
light_source { <10,100,150>, 1 }
background { rgb <0.3, 0.6, 0.9> }

light_source { <14, -5, 2>, 0.5
  media_interaction off }
```

```
// Room
union
{ difference
  { box { <-11, -7, -11>, <16, 7, 10.5> }
    box { <-10, -6, -10>, <15, 6, 10> }
    box { <-4, -2, 9.9>, <2, 3, 10.6> }
  }
  box { <-1.25, -2, 10>, <-0.75, 3, 10.5> }
  box { <-4, 0.25, 10>, <2, 0.75, 10.5> }
  pigment { rgb 1 }
}
```





```
// Scattering media box:  
box  
{ <-5, -6.5, -10.5>, <3, 6.5, 10.25>  
  pigment { rgbt 1 } hollow  
  interior {  
    media  
    { scattering { 1, 0.07 extinction 0.01 }  
      samples 30,100  
    }  
  }  
}
```

