

# Extra results for Chapter 6

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## A.1 Additional Material for Chapter 6 - Full set of relit images for real trees

We show below in the following subsections the full set of time lapse containing the results for relighting.

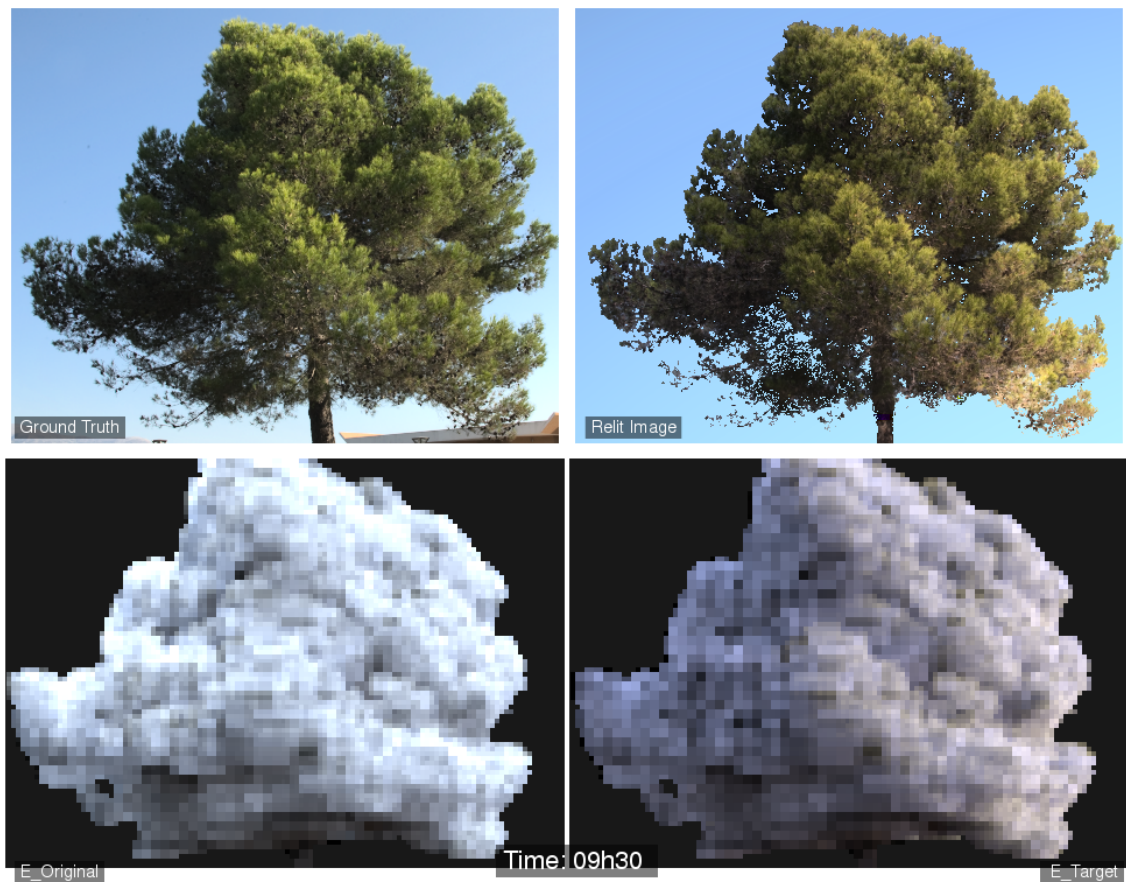
### A.1.1 Pine tree results

The following Figures A.2, A.3, A.4, A.5, A.6, A.7, A.8, A.9, A.10 show the full set of time lapse containing the results for relighting.

Figure A.1 contains the input photograph used for relighting.



Figure A.1: Input photograph used to produce the results in the following Figures A.2, A.3, A.4, A.5, A.6, A.7, A.8, A.9, A.10



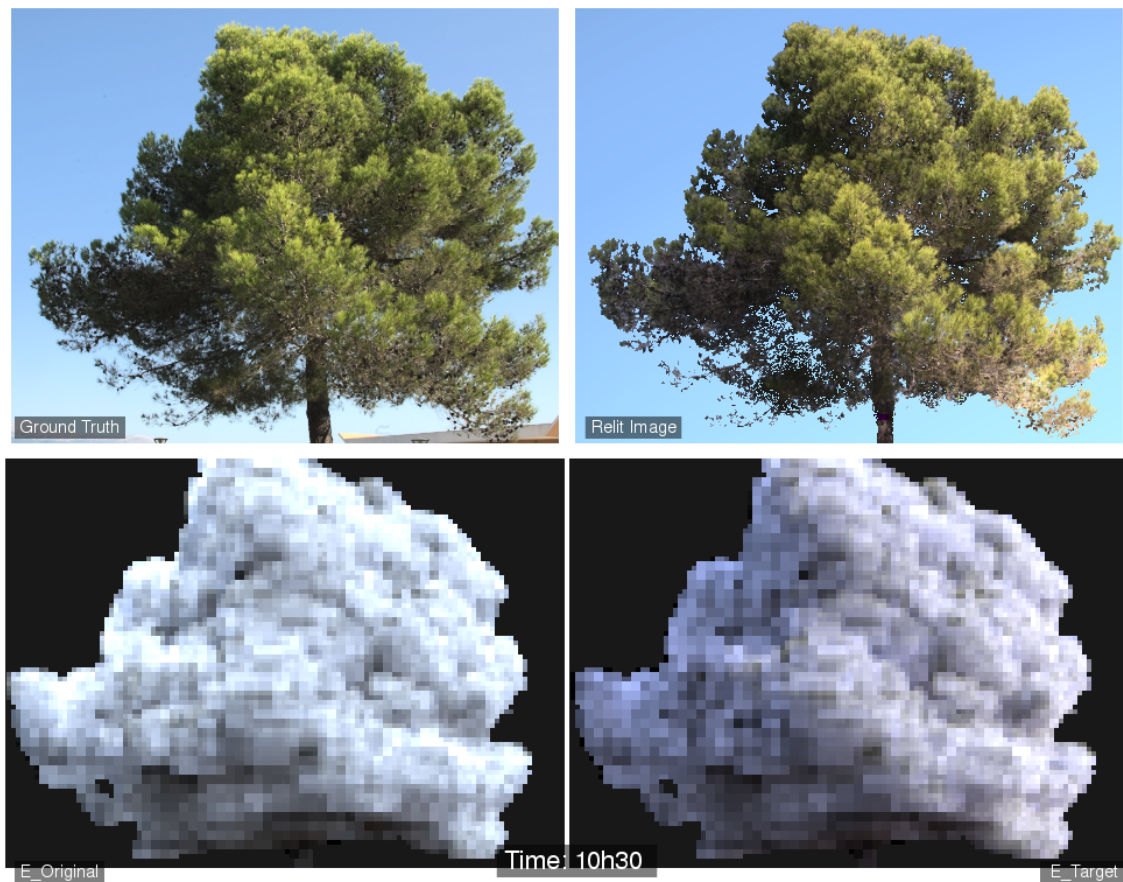


Figure A.3: **Pine Tree relighting for time 10h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $E_{in}$ ; *Bottom row right* -  $E_{targ}$ ;

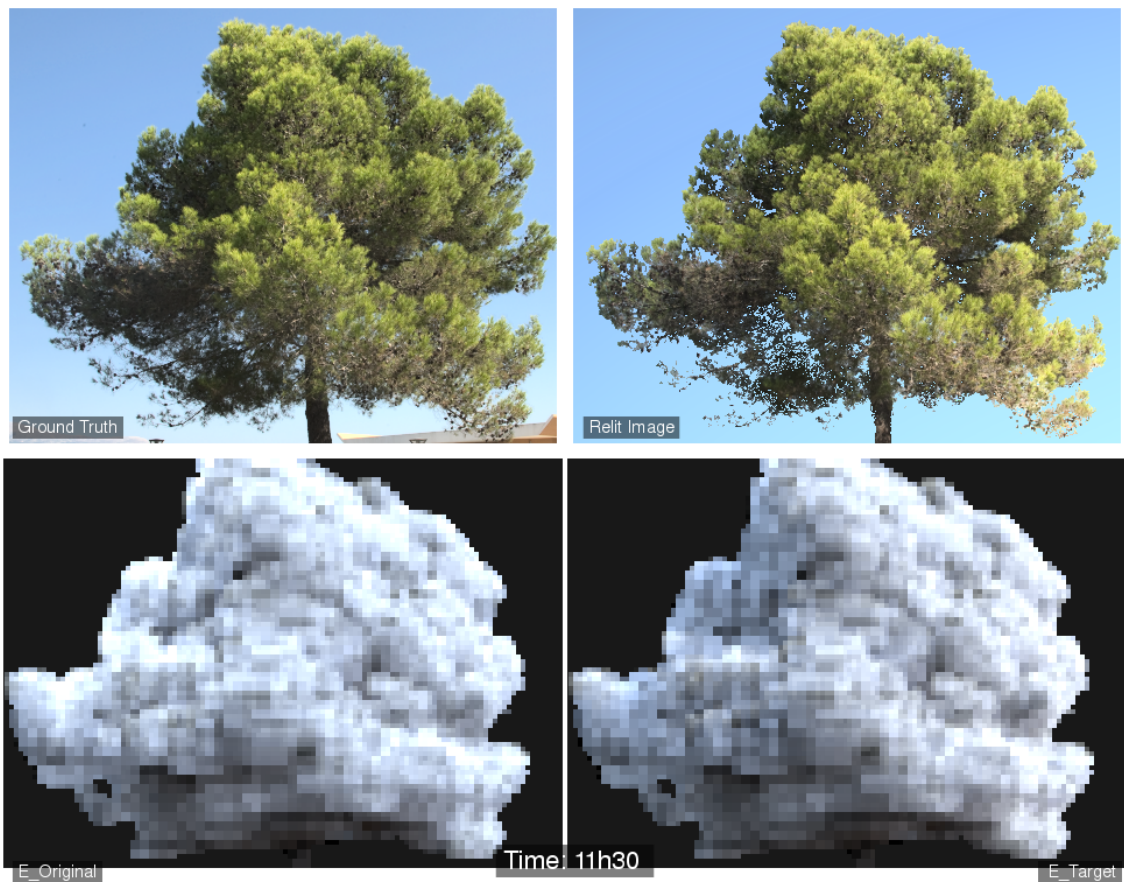


Figure A.4: **Pine Tree relighting for time 11h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$ ;

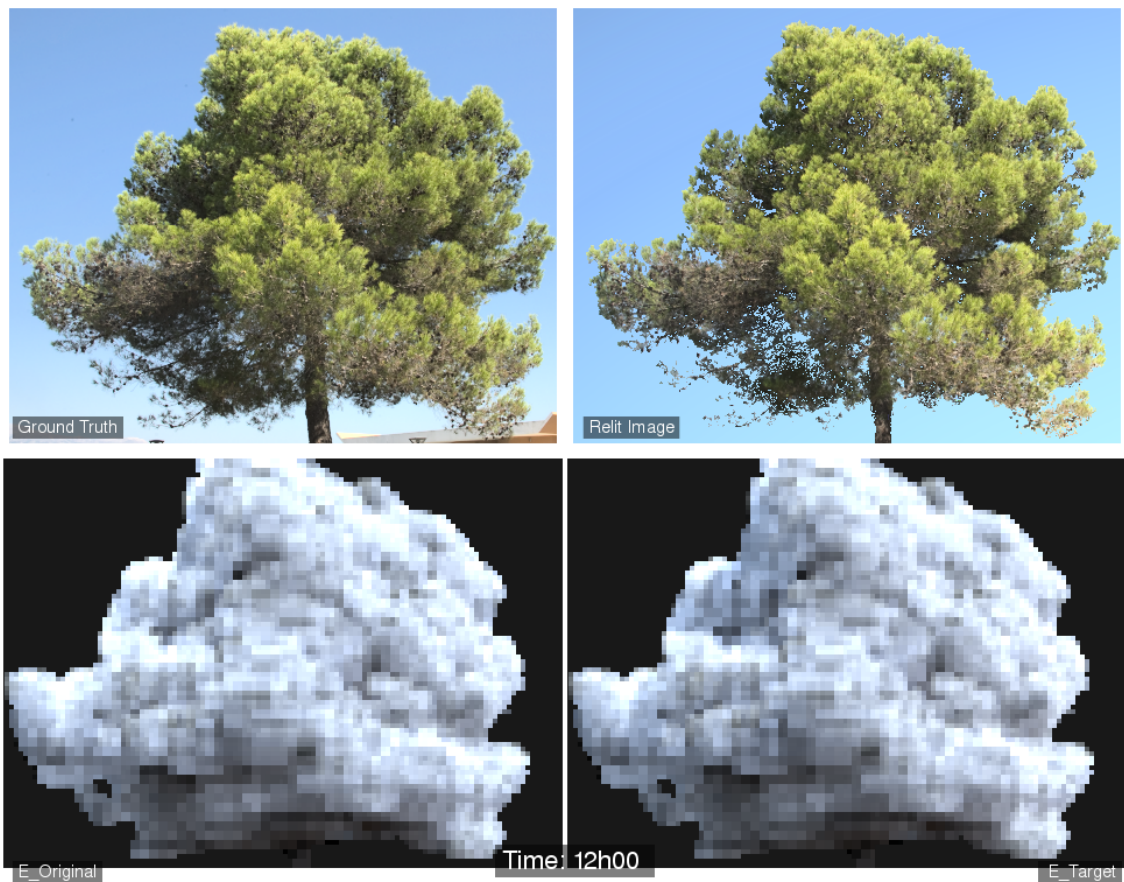


Figure A.5: **Pine Tree relighting for time 12h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $E_{in}$ ; *Bottom row right* -  $E_{targ}$ ;

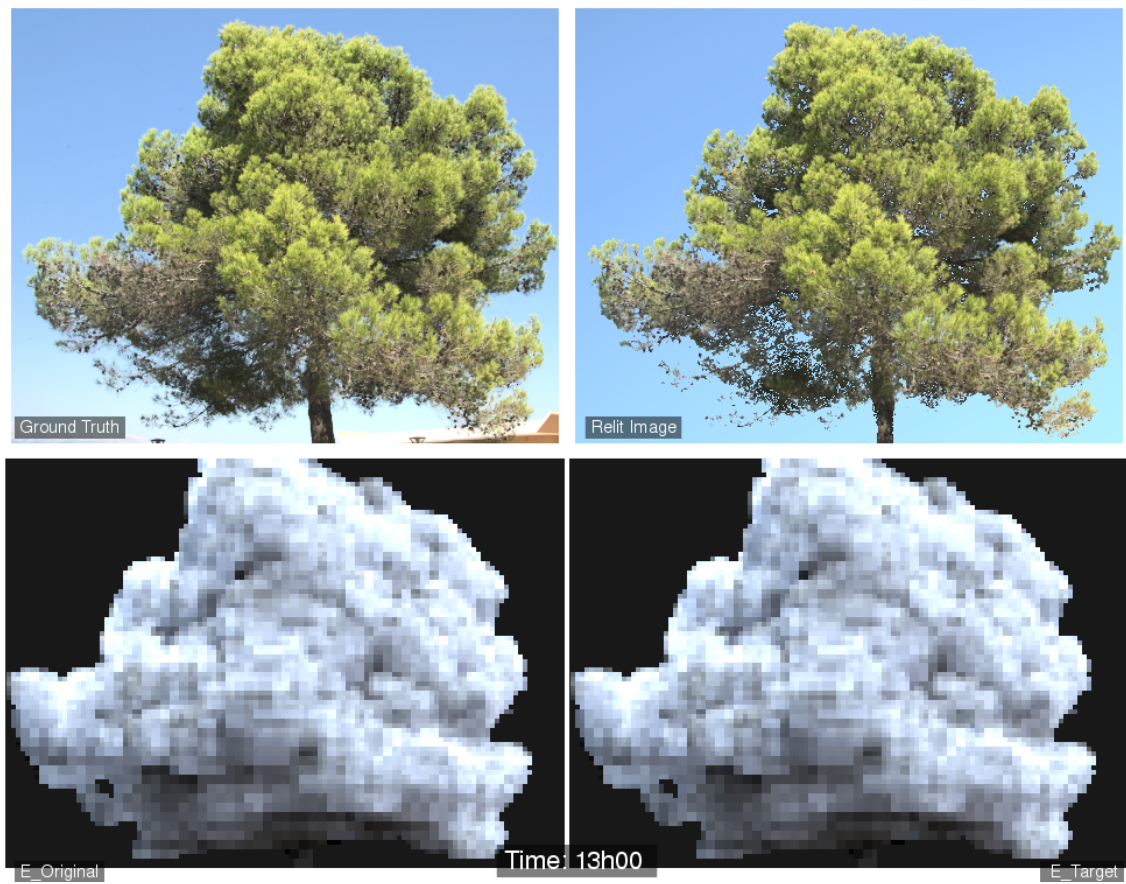


Figure A.6: **Pine Tree relighting for time 13h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $E_{in}$ ; *Bottom row right* -  $E_{targ}$ ;

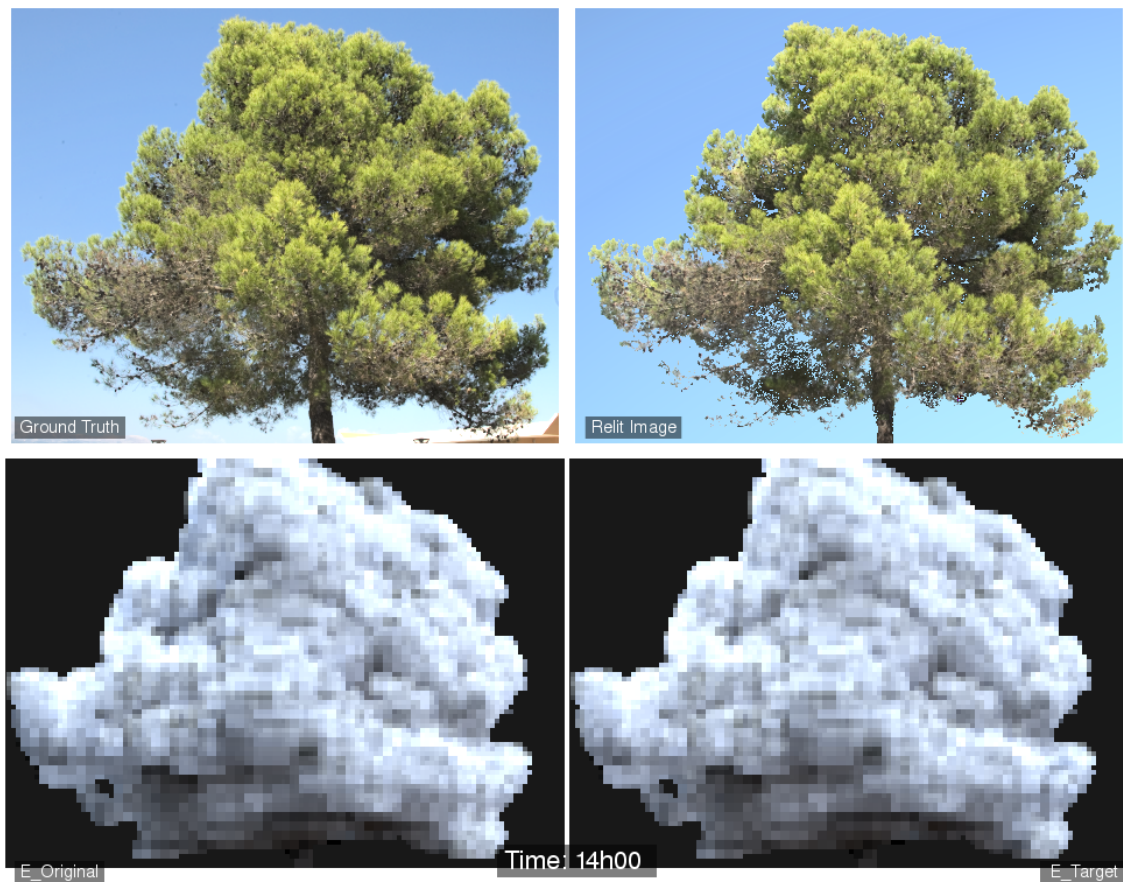


Figure A.7: **Pine Tree relighting for time 14h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$ ;

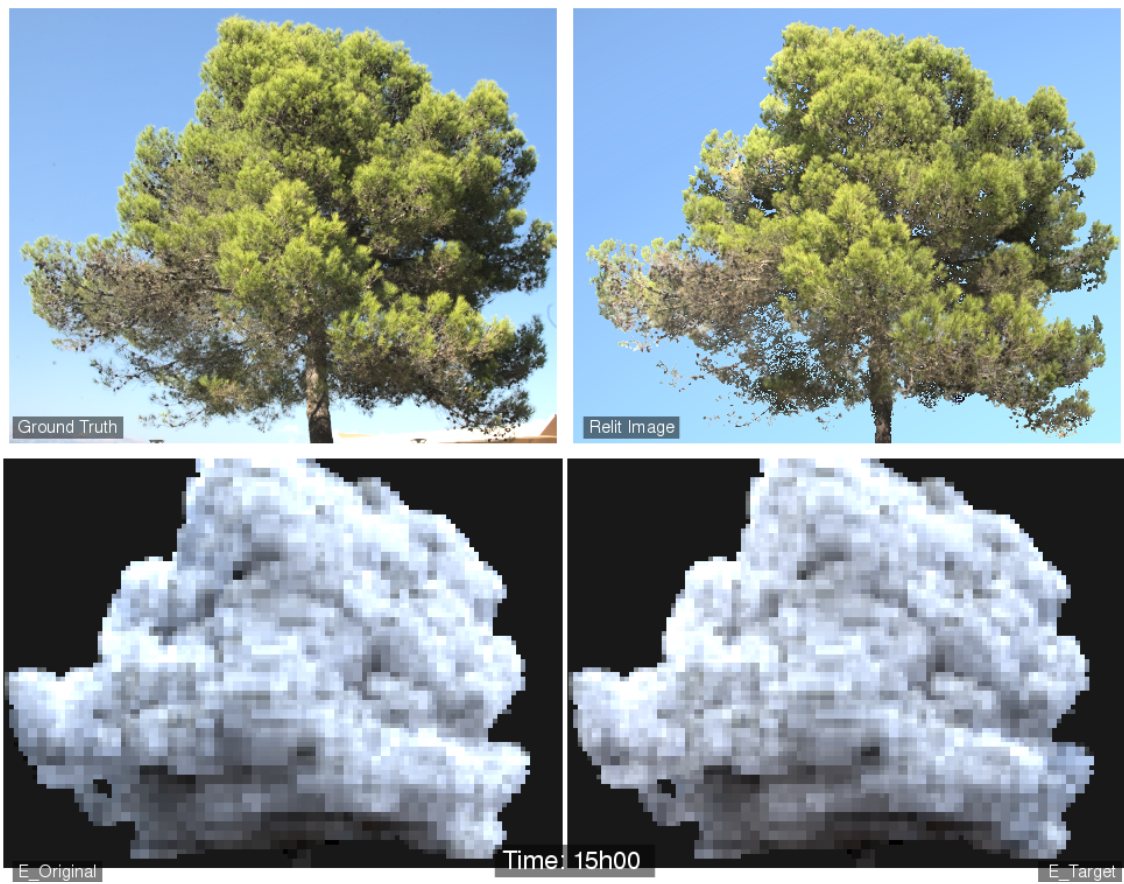


Figure A.8: **Pine Tree relighting for time 15h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $E_{in}$ ; *Bottom row right* -  $E_{targ}$ ;



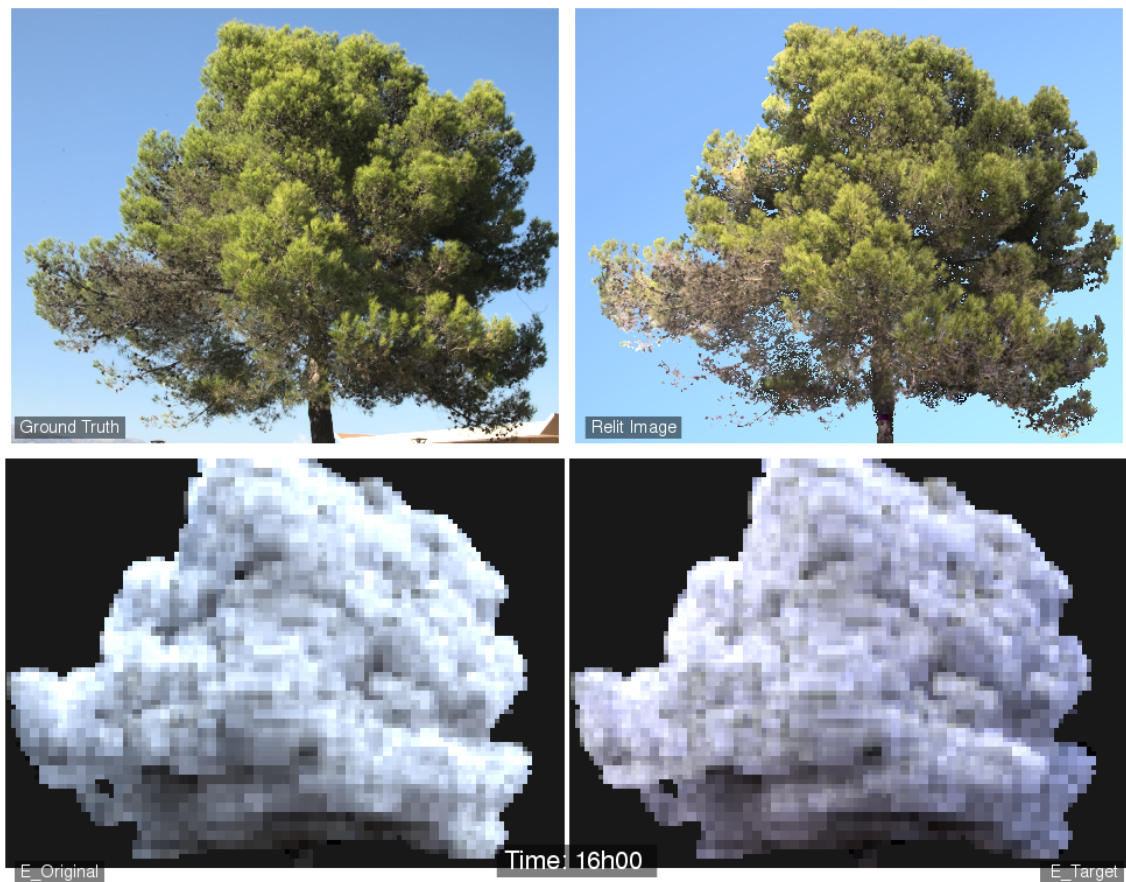


Figure A.9: **Pine Tree relighting for time 16h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $E_{in}$ ; *Bottom row right* -  $E_{targ}$ ;

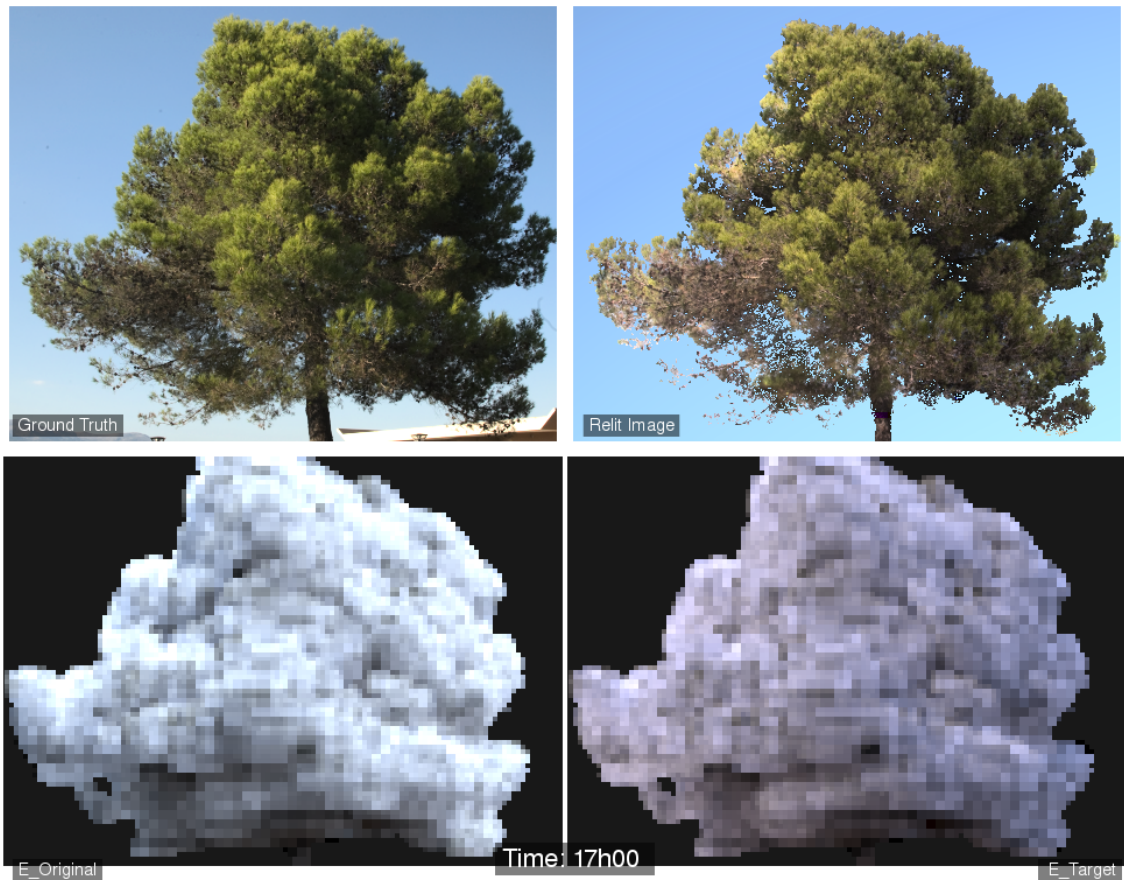


Figure A.10: **Pine Tree relighting for time 17h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$ ;

**A.1.2 Mulberry tree results**

The following Figures A.12, A.13, A.14, A.15, A.16, A.17, A.18, A.19, A.20, A.21 show the full set of time lapse containing the results for relighting.

Figure A.11 contains the input photograph used for relighting.



Figure A.11: Input photograph used to produce the results in the following Figures A.12, A.13, A.14, A.15, A.16, A.17, A.18, A.19, A.20, A.21

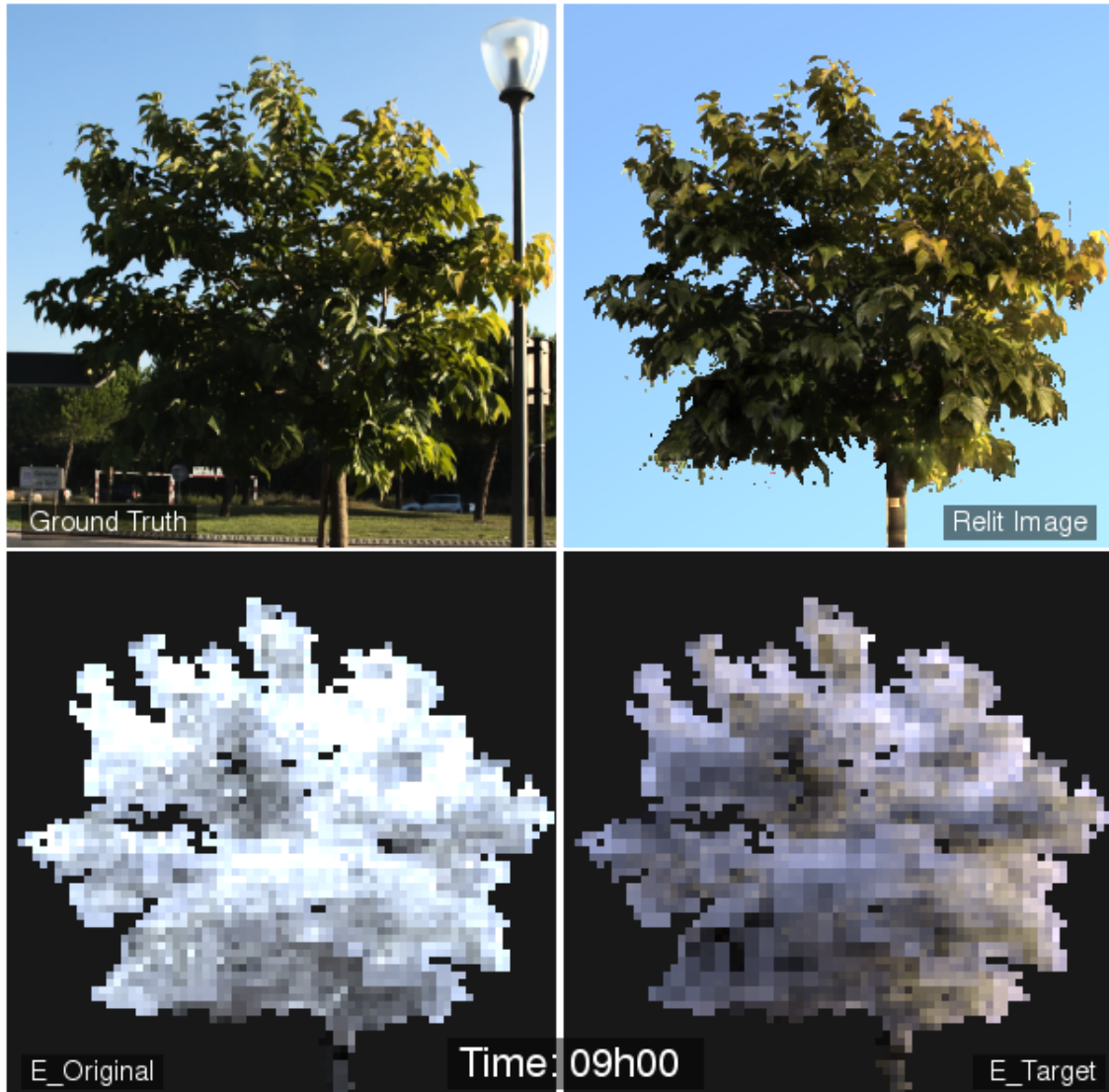


Figure A.12: **Mulberry tree relighting for time 9h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$ ;

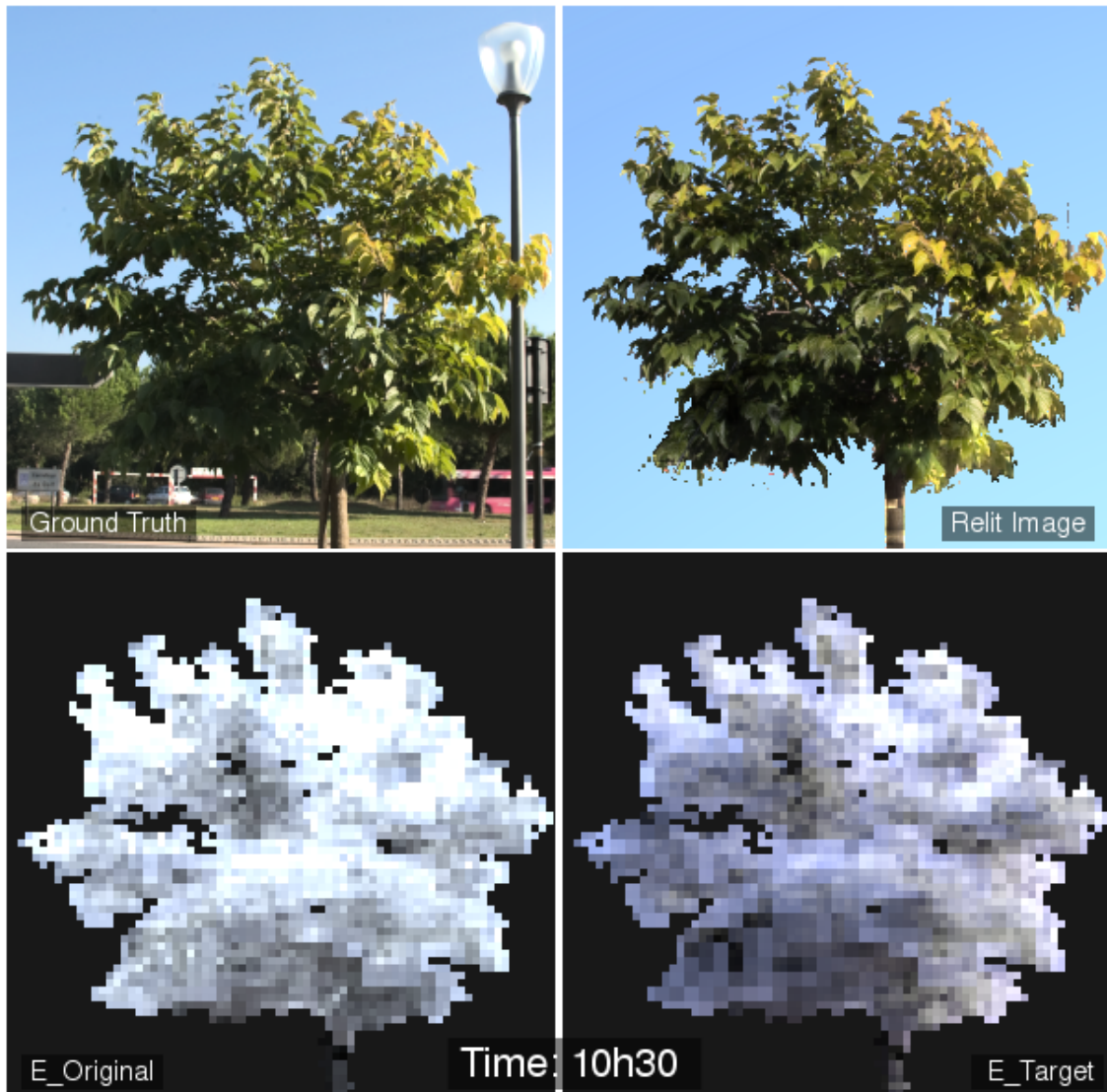


Figure A.13: **Mulberry tree relighting for time 10h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$

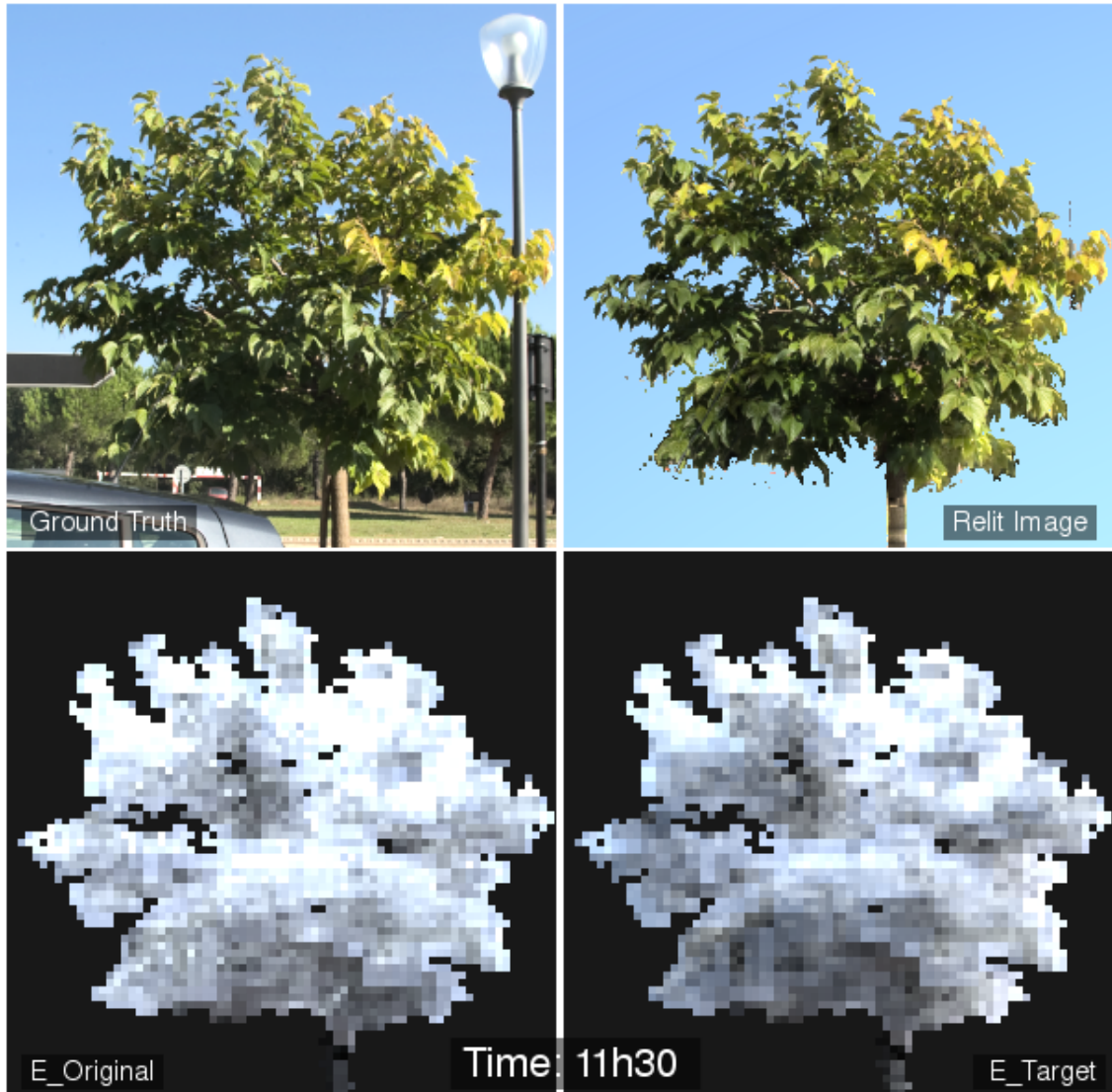


Figure A.14: **Mulberry tree relighting for time 11h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$

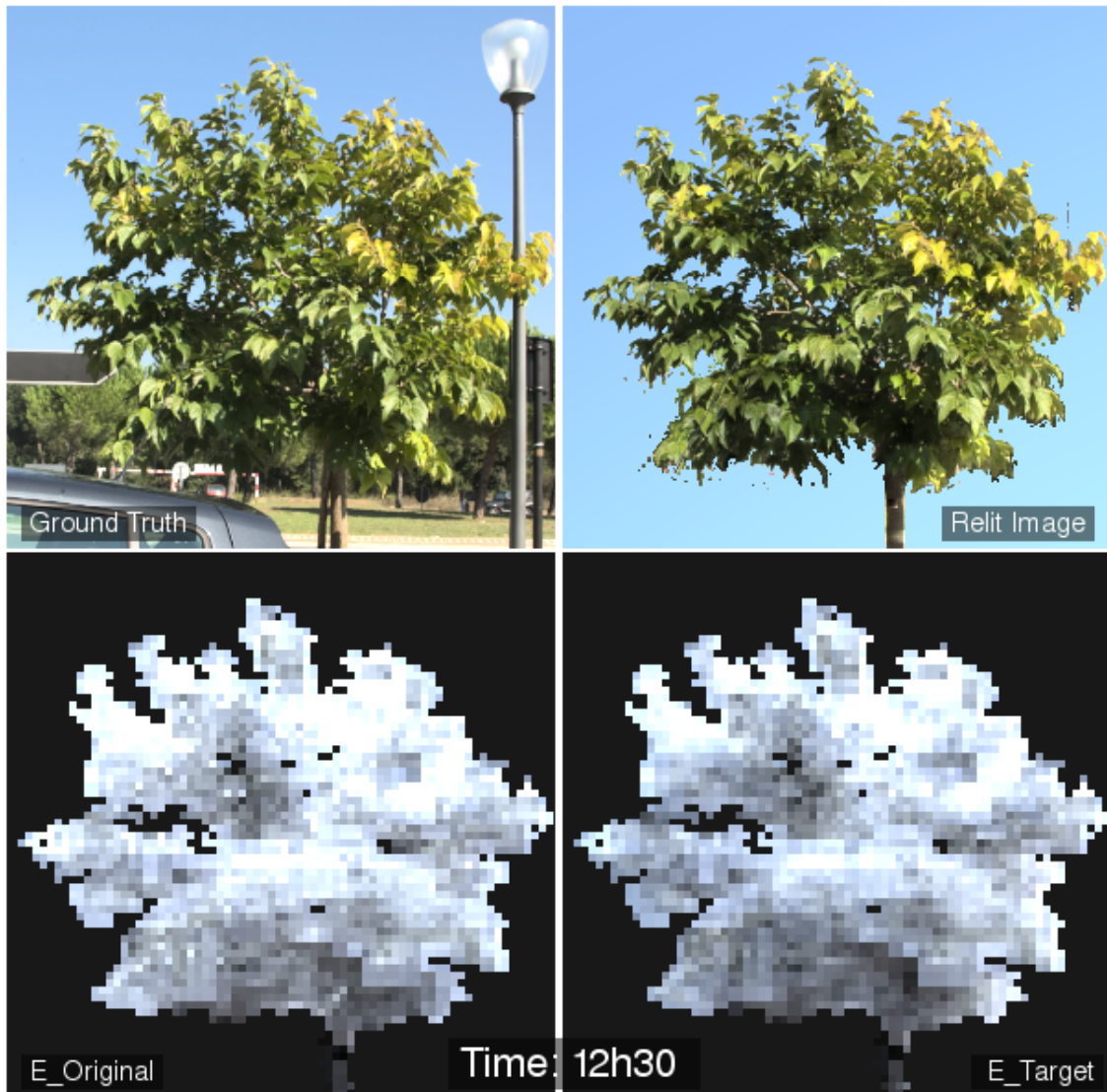


Figure A.15: **Mulberry tree relighting for time 12h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$

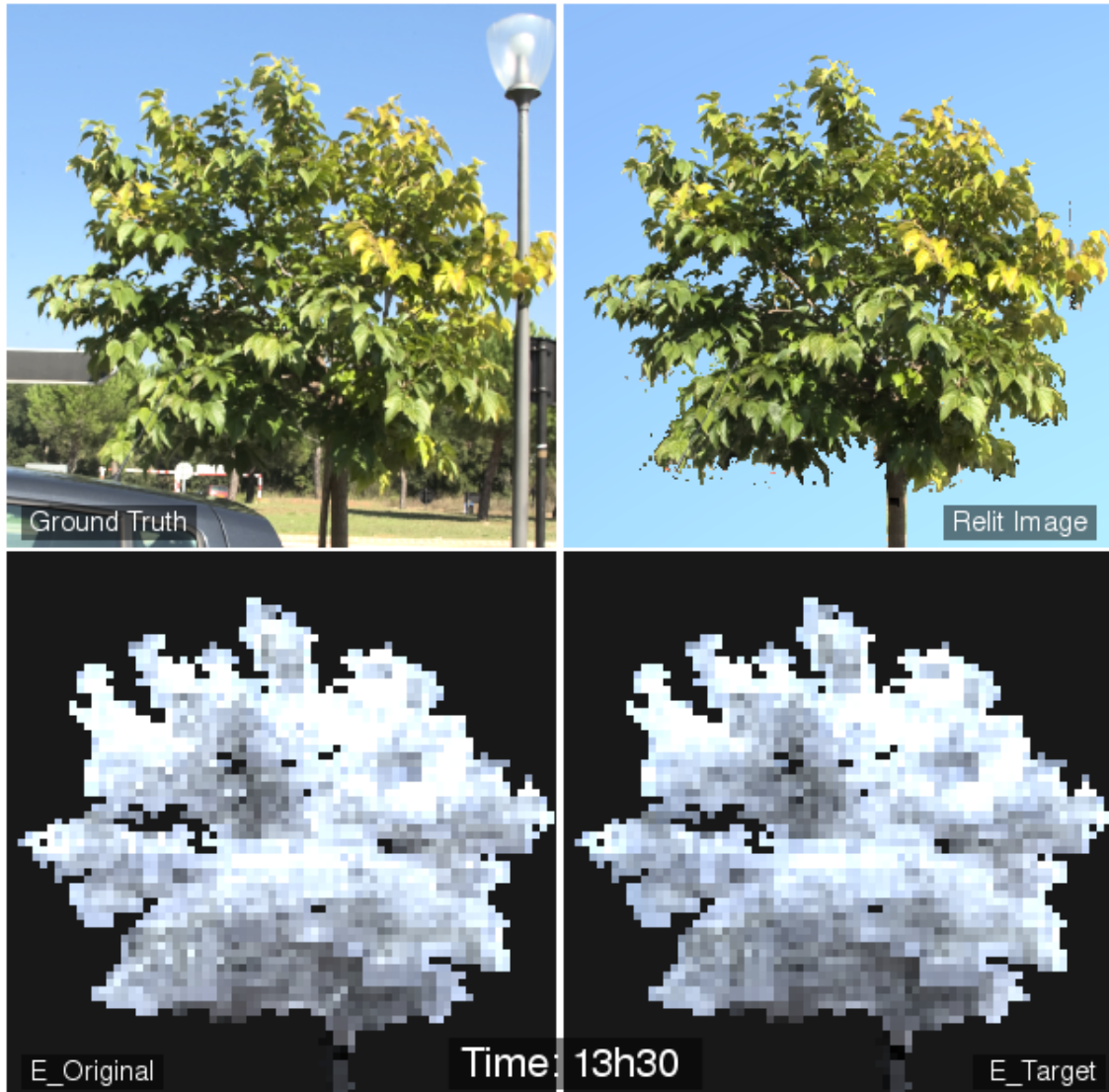


Figure A.16: **Mulberry tree relighting for time 13h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{target}$



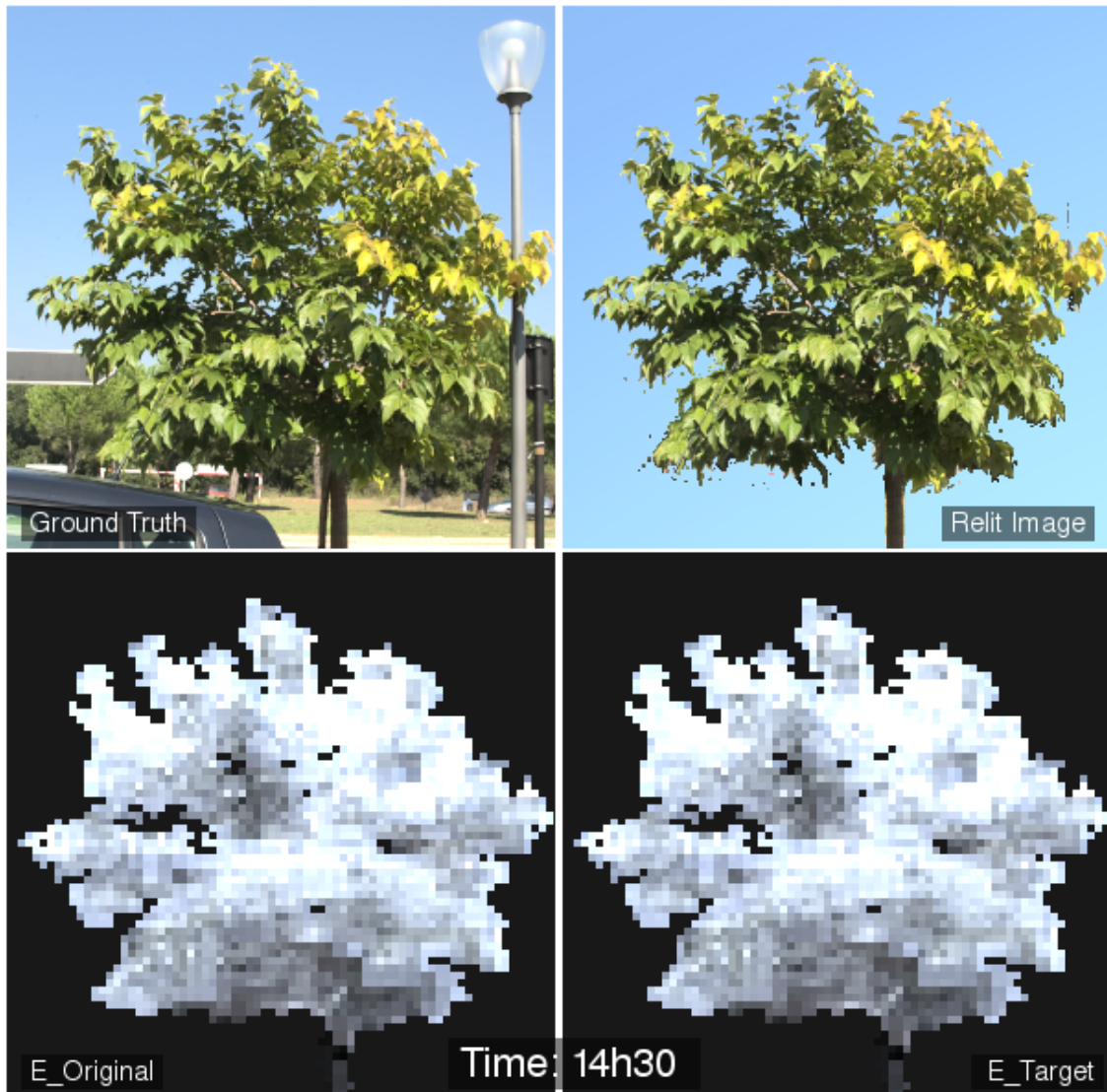


Figure A.17: **Mulberry tree relighting for time 14h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$

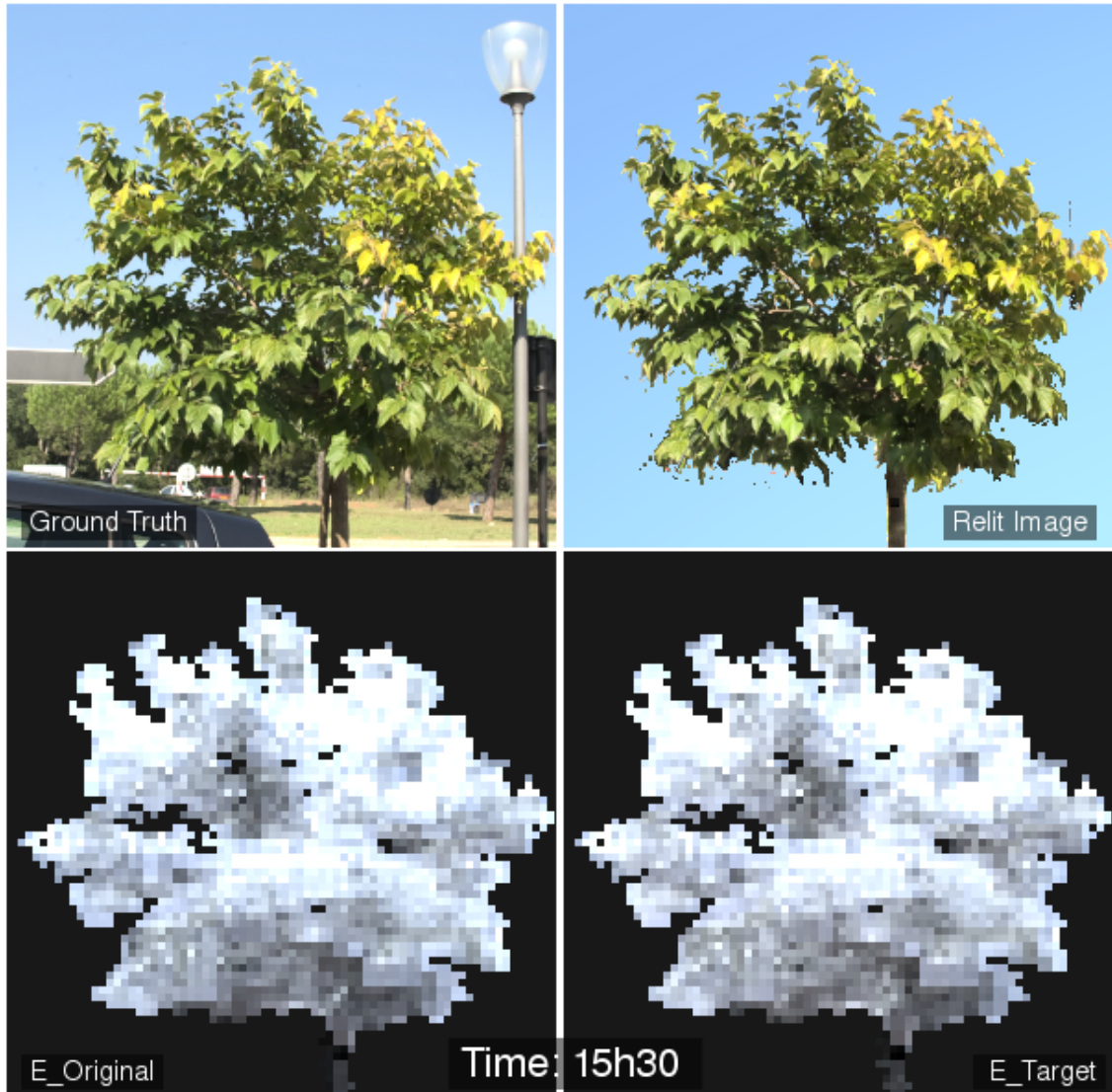


Figure A.18: **Mulberry tree relighting for time 15h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$

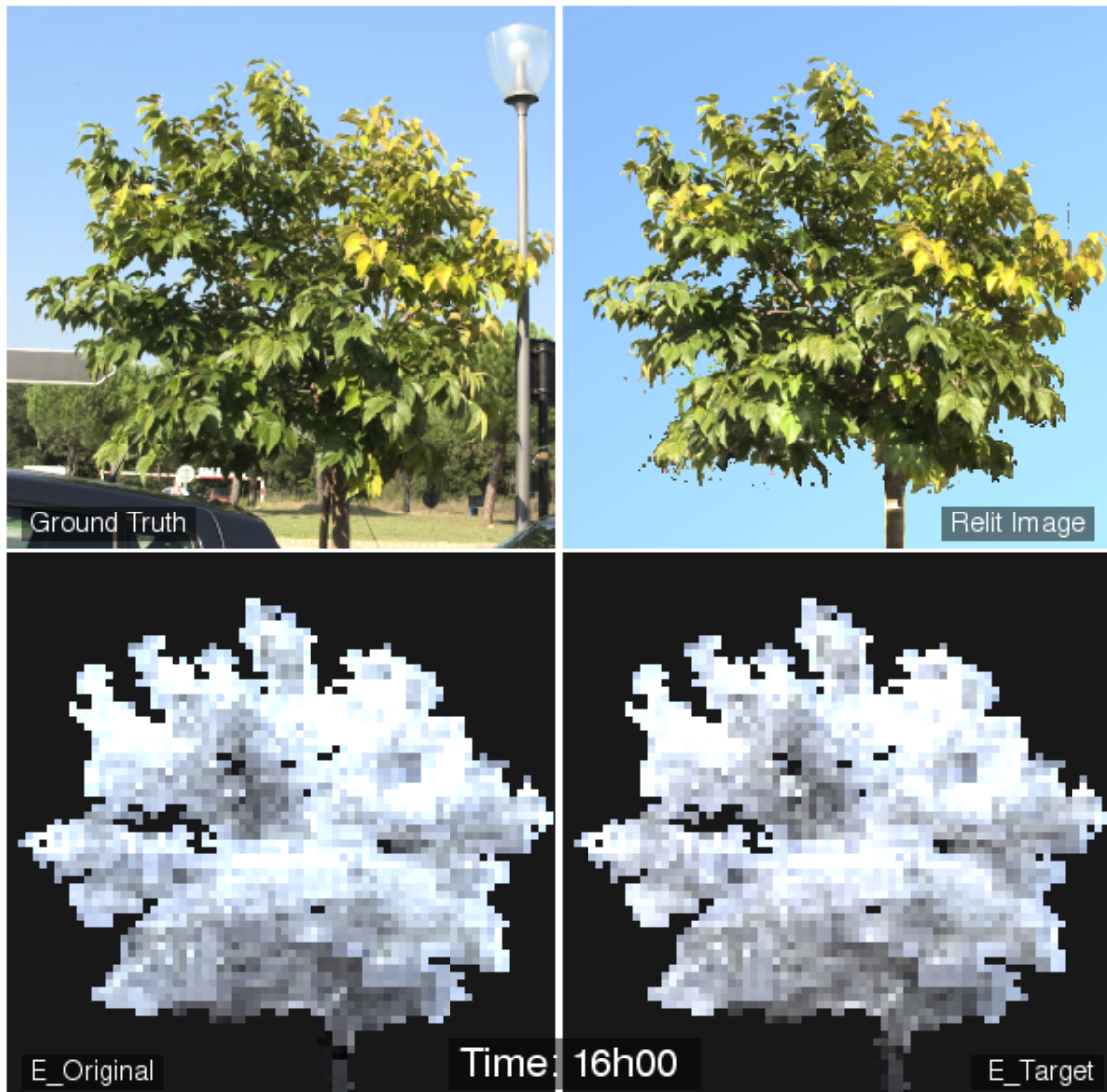


Figure A.19: **Mulberry tree relighting for time 16h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$

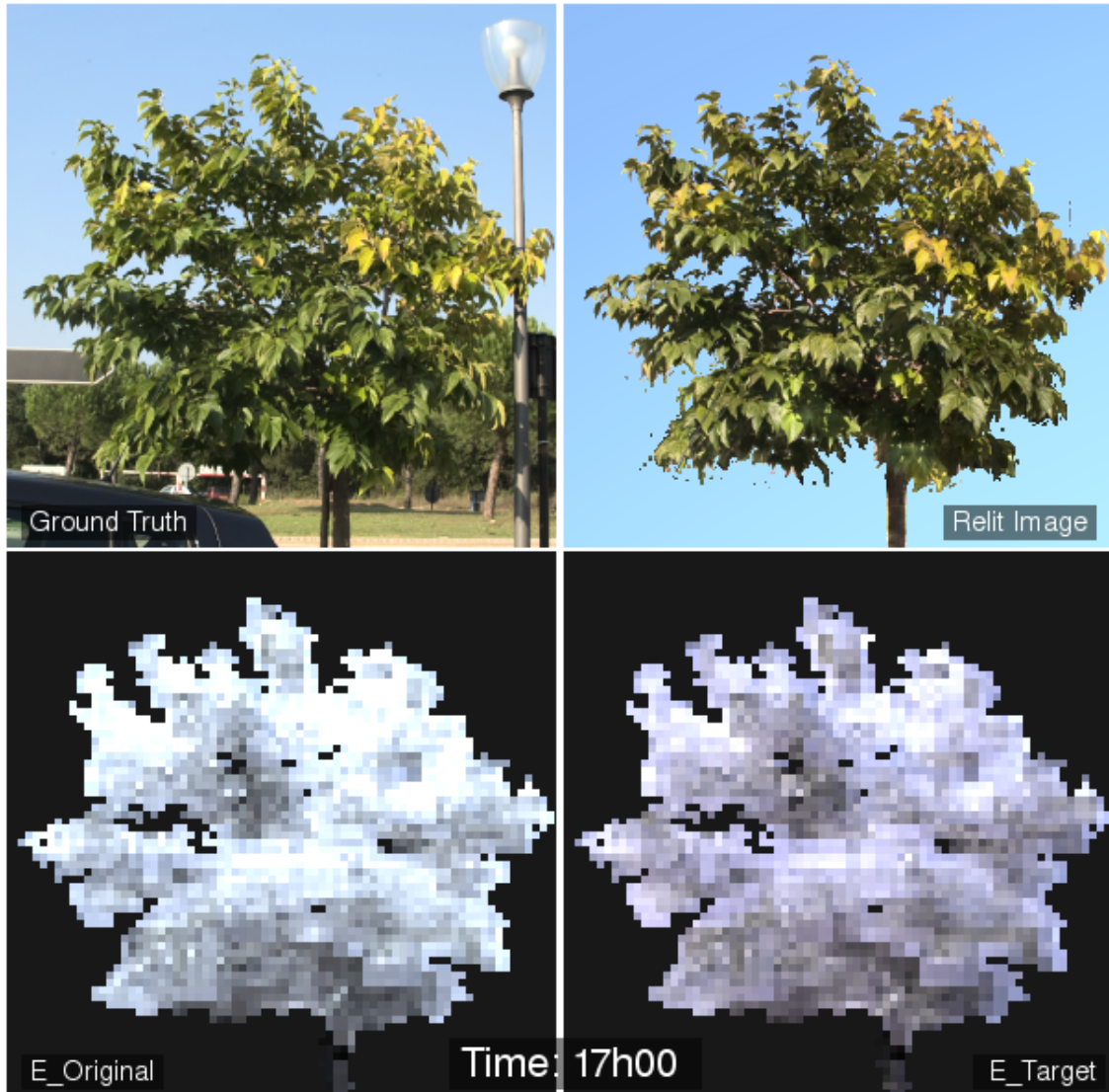


Figure A.20: **Mulberry tree relighting for time 17h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{target}$

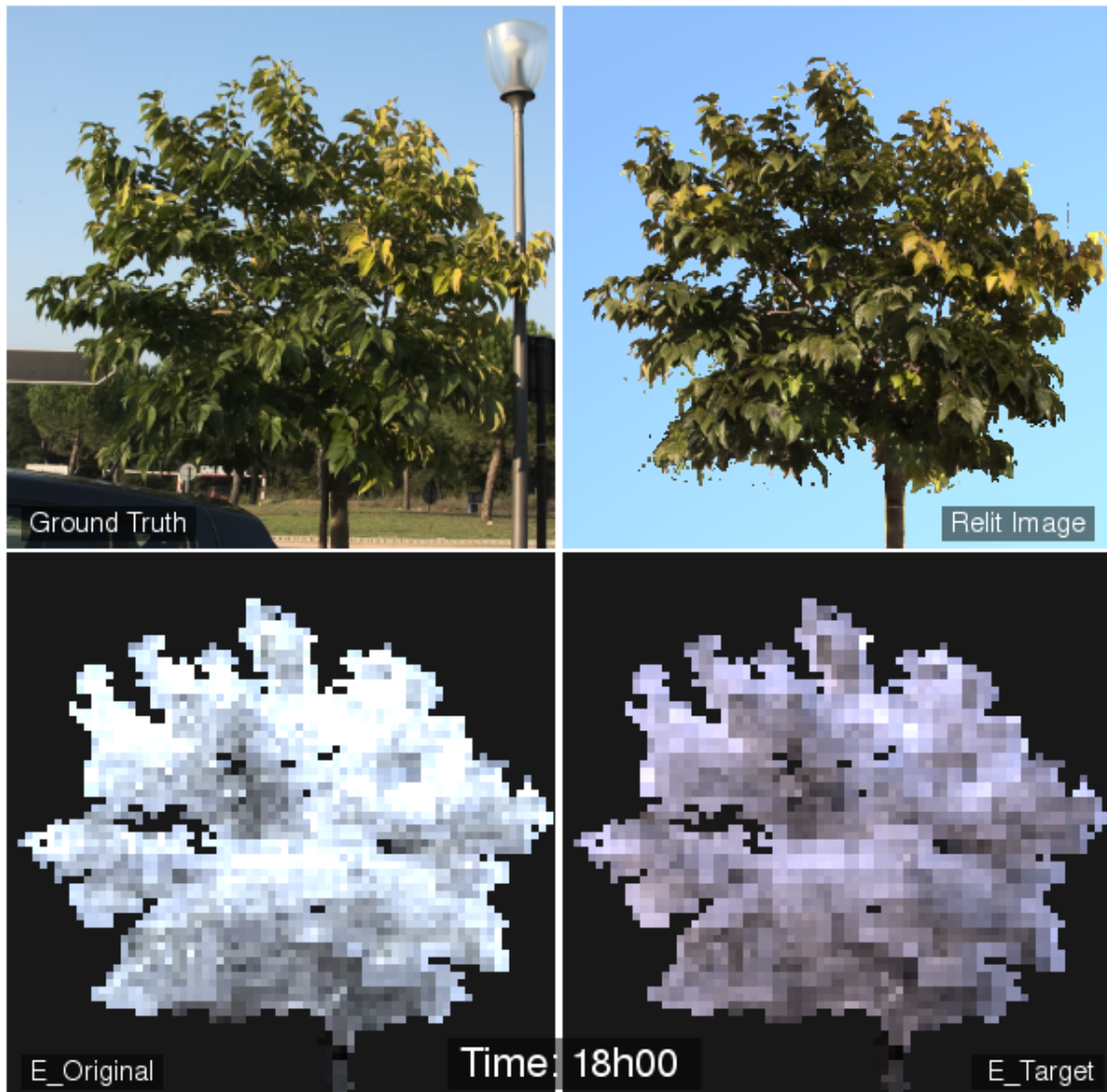


Figure A.21: **Mulberry tree relighting for time 18h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$

### A.1.3 Oak tree results

The following Figures A.23, A.24, A.25, A.26, A.27, A.28, A.29, A.30, A.31, A.32 show the full set of time lapse containing the results for relighting.

Figure A.22 contains the input photograph used for relighting.



Figure A.22: Input photograph used to produce the results in the following Figures A.23, A.24, A.25, A.26, A.27, A.28, A.29, A.30, A.31, , A.32

## A.2 Additional Material for Chapter 6 - Synthetic Renderings of Trees

### A.2.1 Horse Chestnut

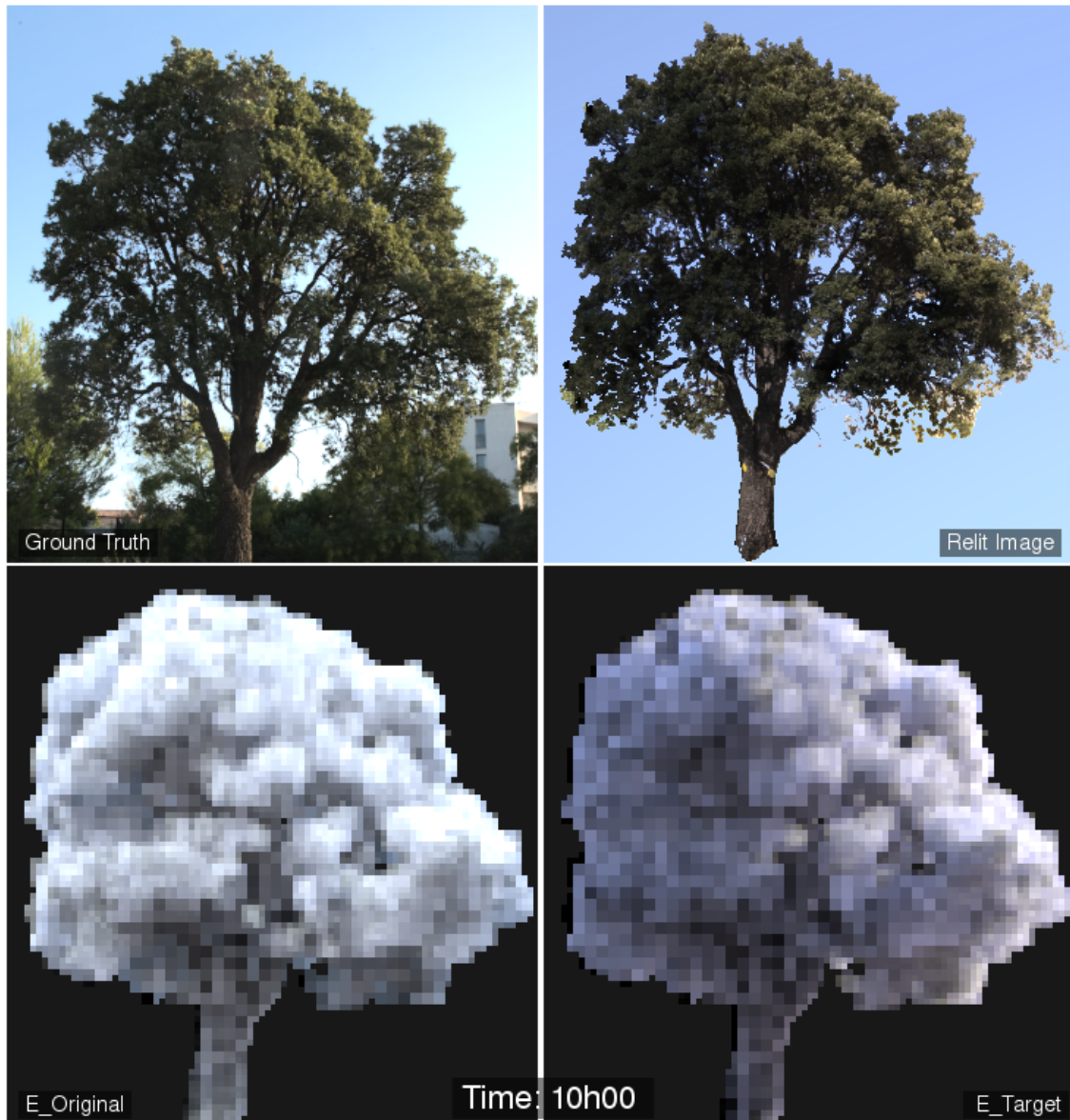


Figure A.23: **Pine Tree relighting for time 10h00:** *Top row left - Ground Truth Image; Top row right - Relighting result; Bottom row left - Original  $\tilde{E}_{in}$ ; Bottom row right -  $\tilde{E}_{targ}$*

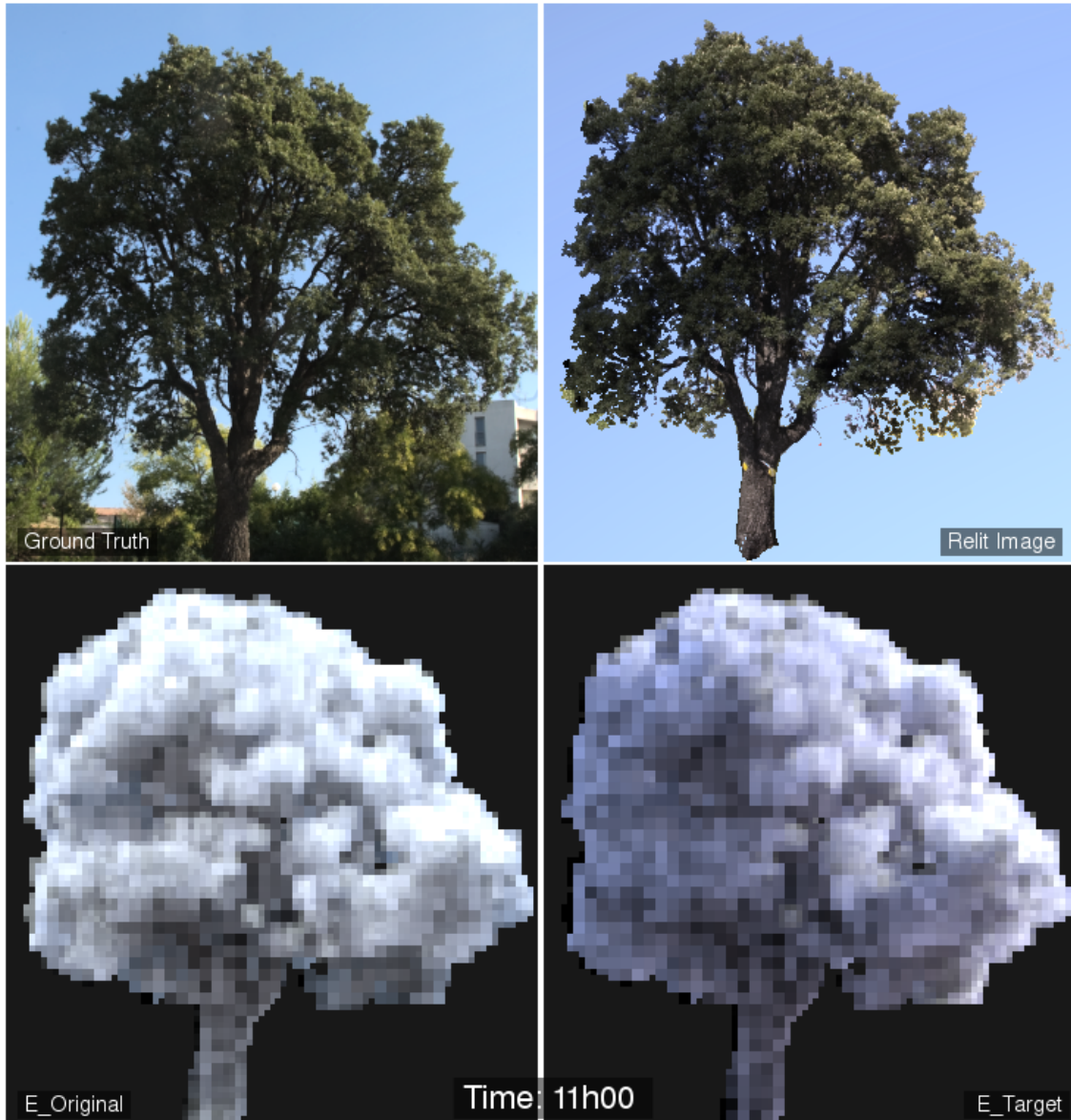


Figure A.24: **Pine Tree relighting for time 11h00:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$



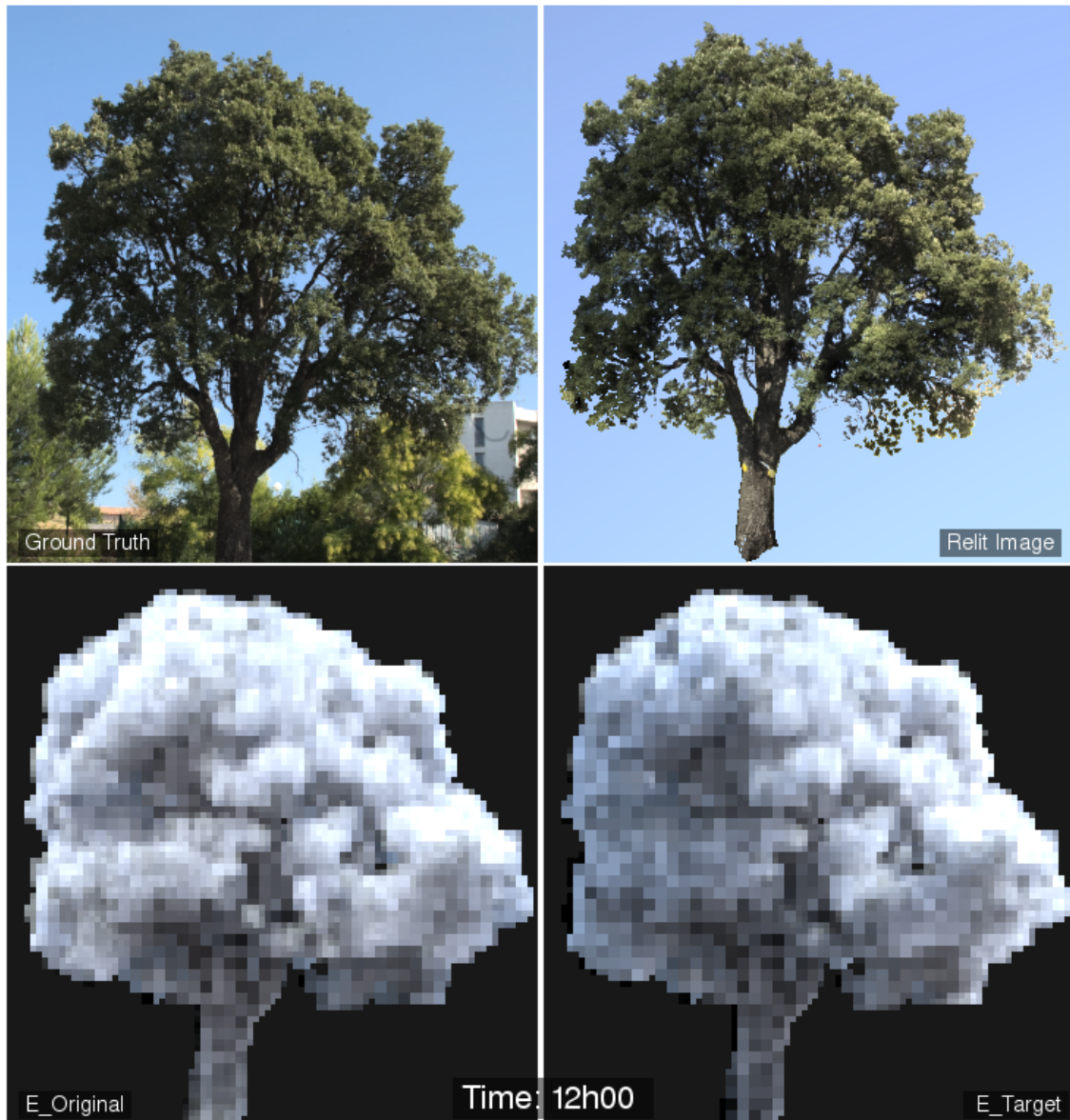


Figure A.25: **Pine Tree relighting for time 12h00:** *Top row left - Ground Truth Image; Top row right - Relighting result; Bottom row left - Original  $\tilde{E}_{in}$ ; Bottom row right -  $\tilde{E}_{targ}$*

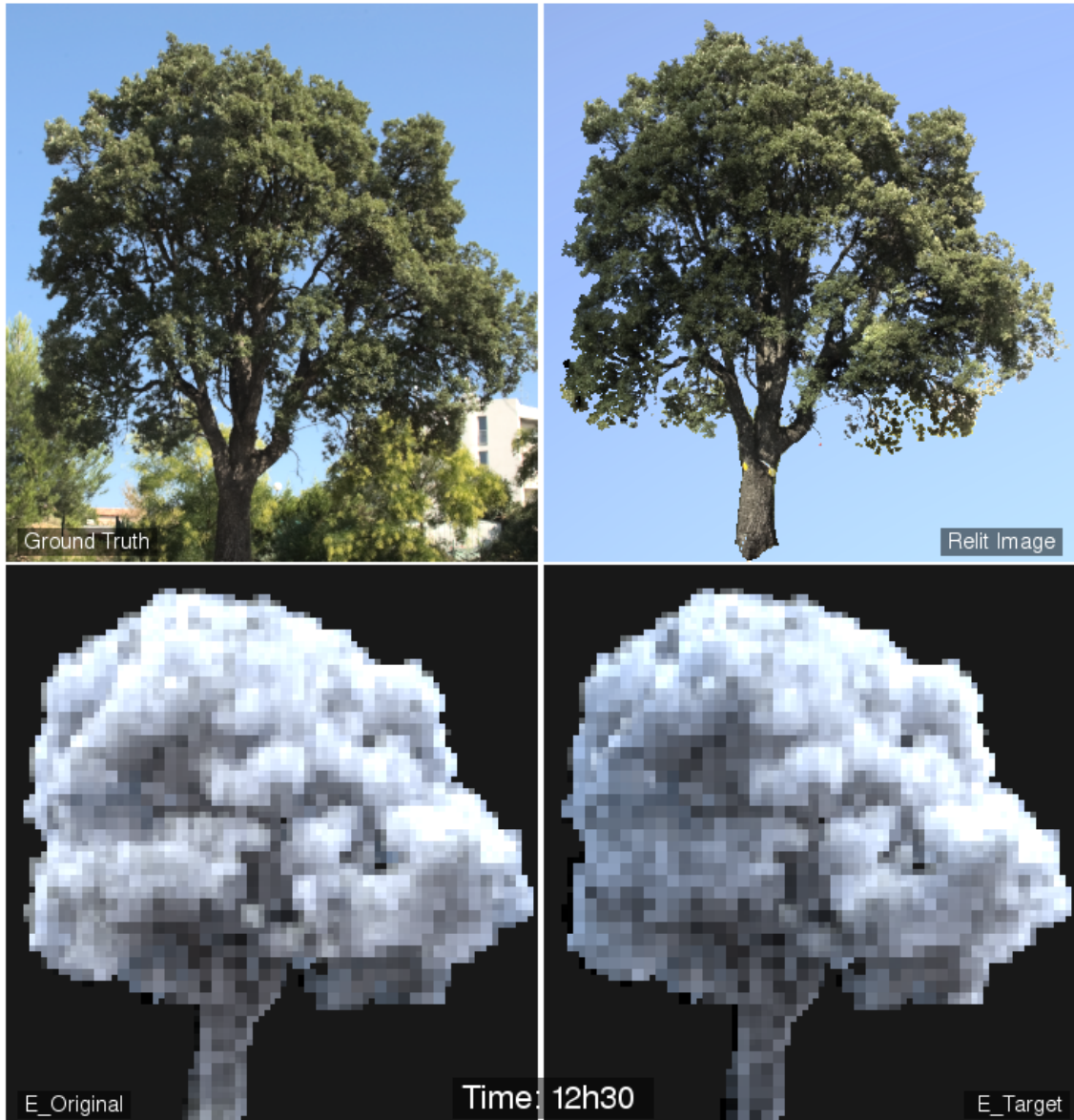


Figure A.26: **Pine Tree relighting for time 12h30:** *Top row left - Ground Truth Image; Top row right - Relighting result; Bottom row left - Original  $\tilde{E}_{in}$ ; Bottom row right -  $\tilde{E}_{targ}$*

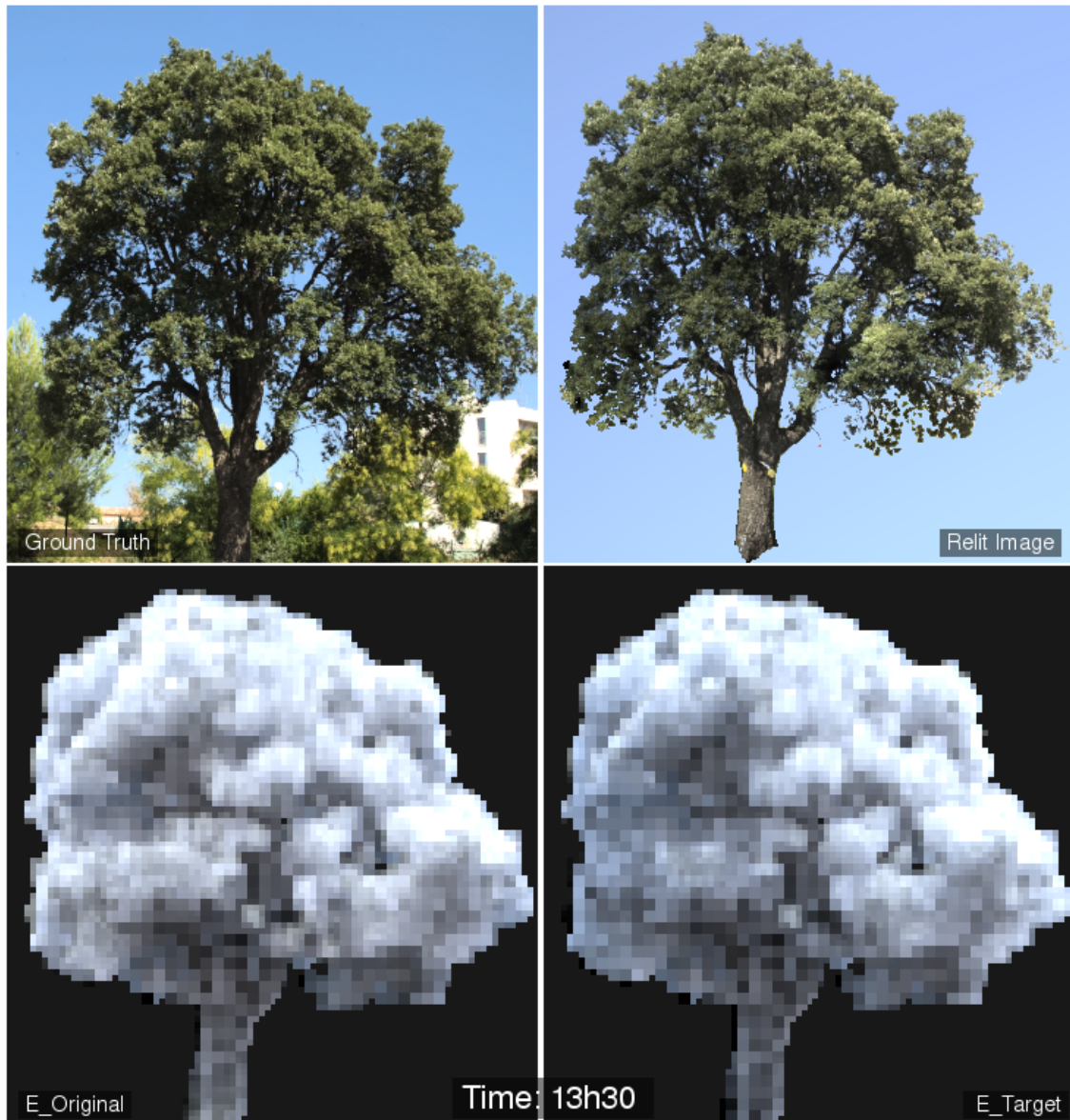


Figure A.27: **Pine Tree relighting for time 13h30:** Top row left - Ground Truth Image; Top row right - Relighting result; Bottom row left - Original  $\tilde{E}_{in}$ ; Bottom row right -  $\tilde{E}_{targ}$

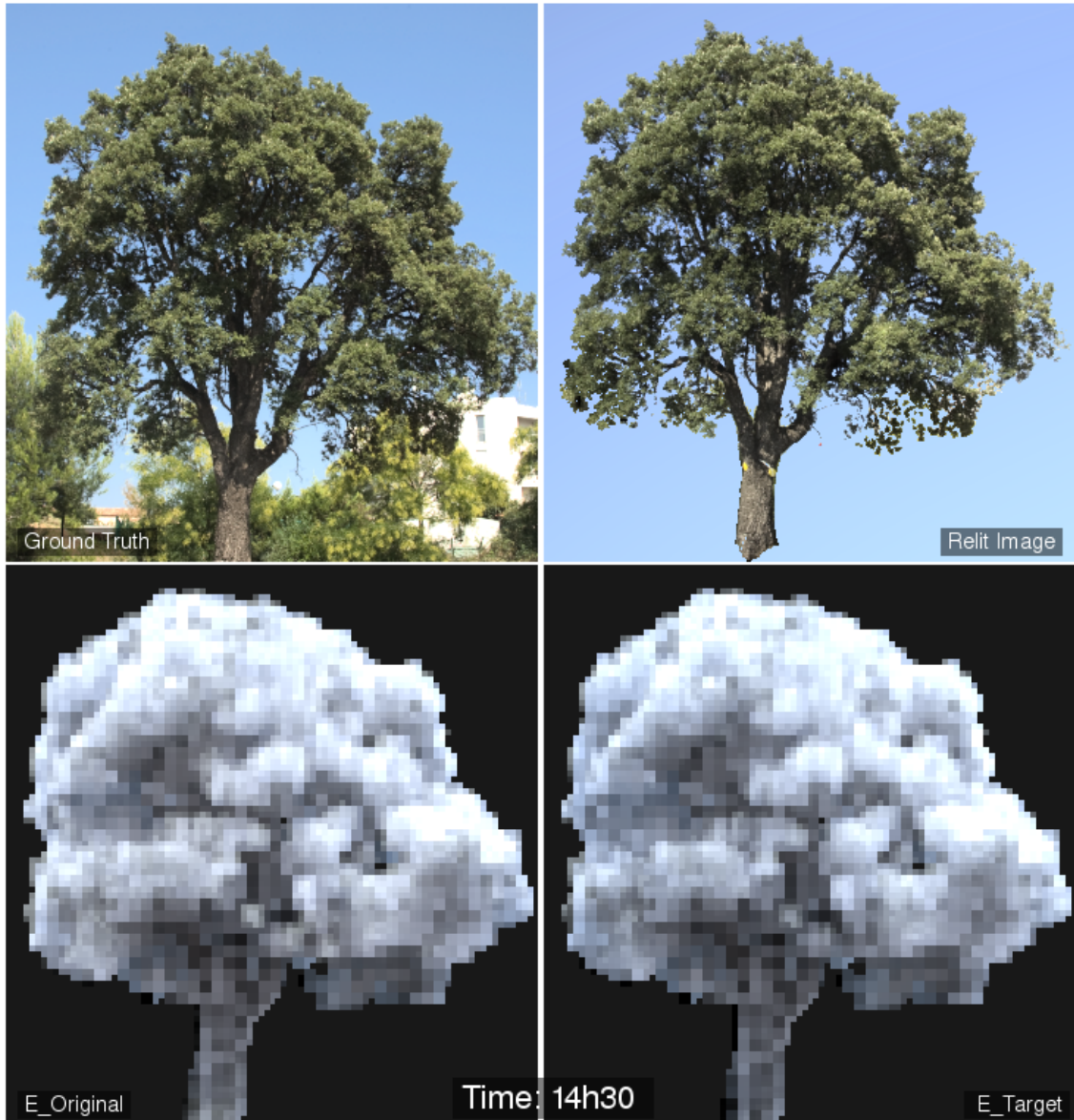


Figure A.28: **Pine Tree relighting for time 14h30:** *Top row left - Ground Truth Image; Top row right - Relighting result; Bottom row left - Original  $\tilde{E}_{in}$ ; Bottom row right -  $\tilde{E}_{targ}$*

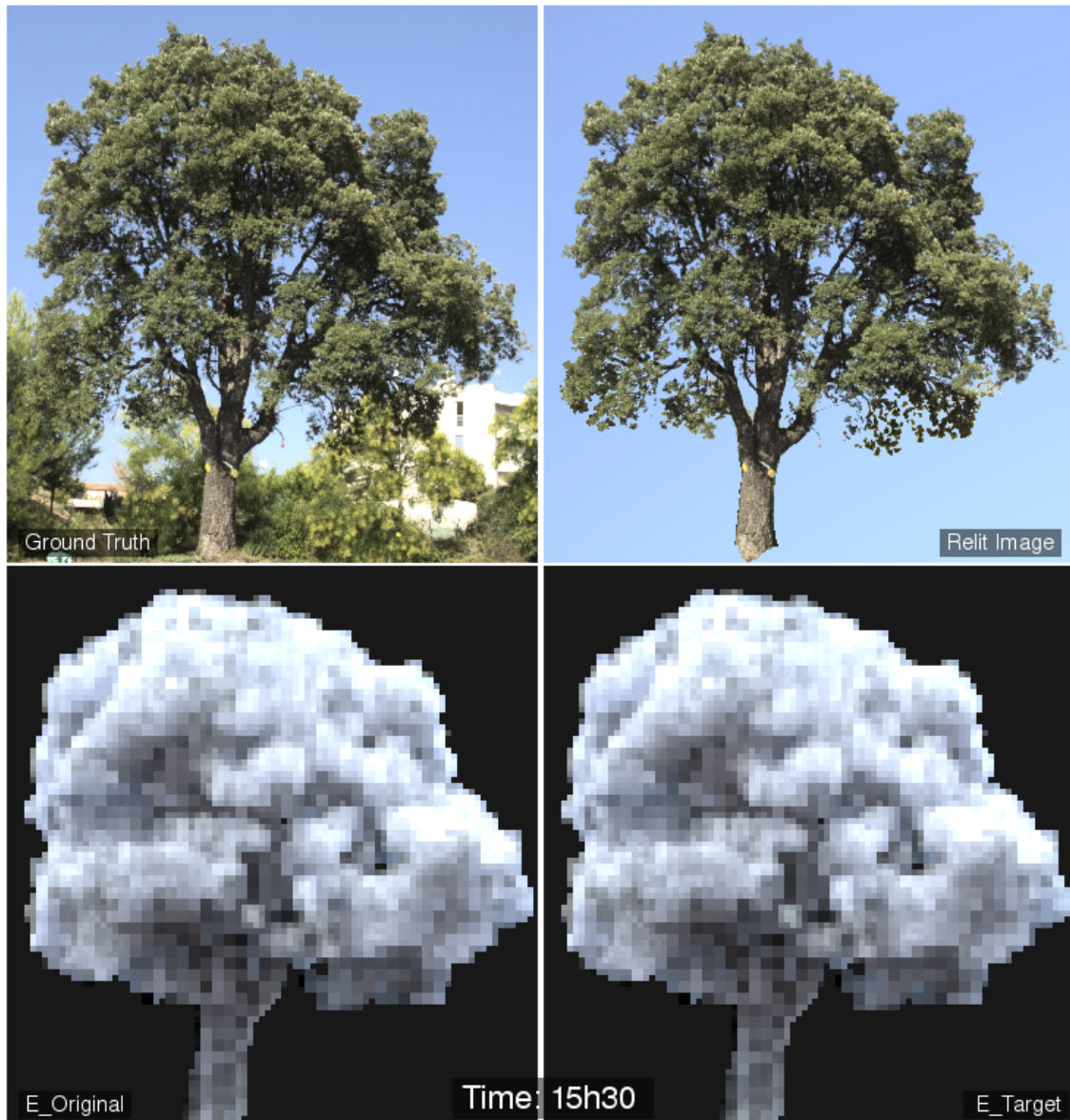


Figure A.29: **Pine Tree relighting for time 15h30:** *Top row left - Ground Truth Image; Top row right - Relighting result; Bottom row left - Original  $\tilde{E}_{in}$ ; Bottom row right -  $\tilde{E}_{targ}$*

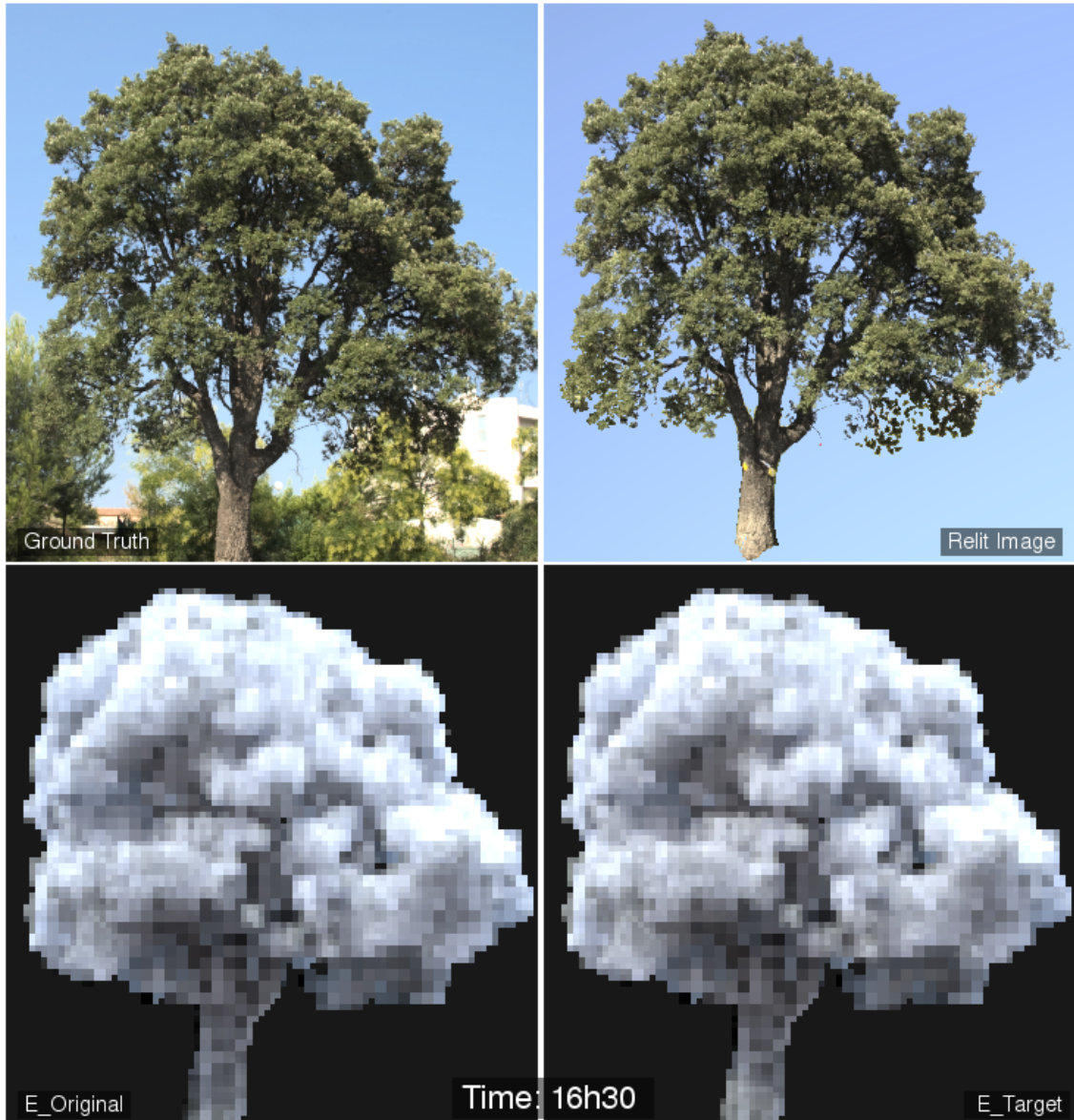


Figure A.30: **Pine Tree relighting for time 16h30:** *Top row left - Ground Truth Image; Top row right - Relighting result; Bottom row left - Original  $\tilde{E}_{in}$ ; Bottom row right -  $\tilde{E}_{targ}$*

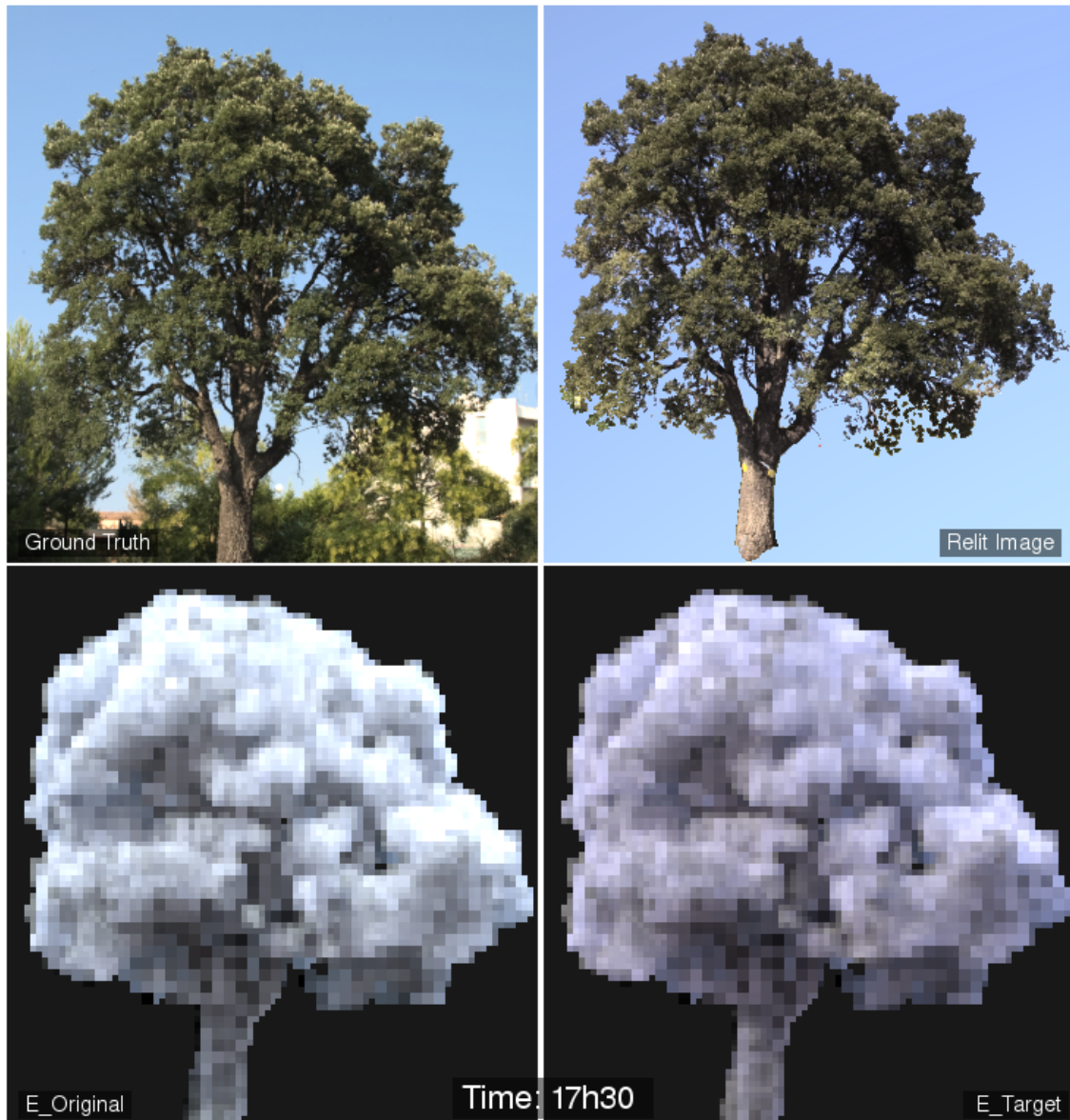


Figure A.31: **Pine Tree relighting for time 17h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$

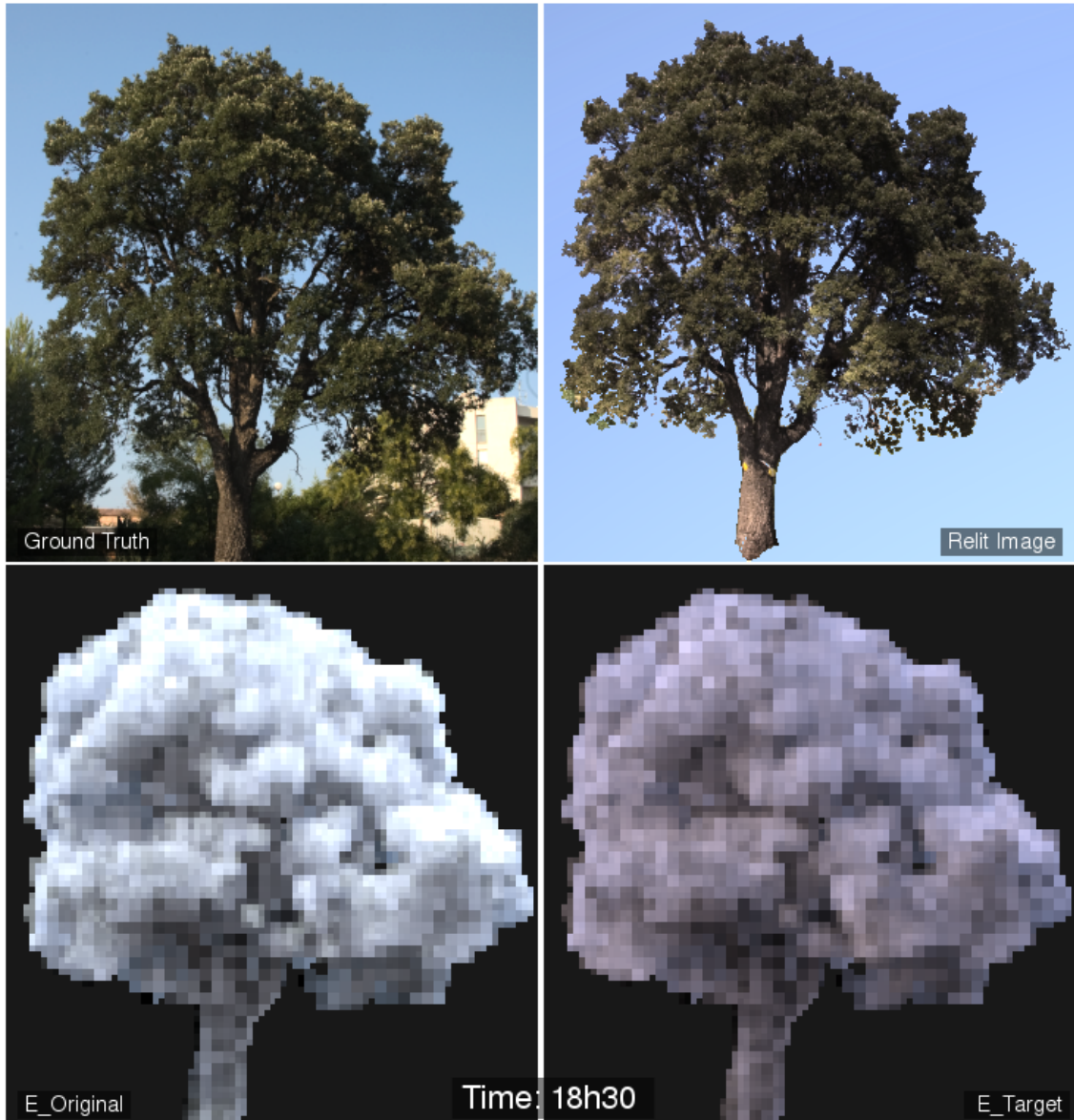


Figure A.32: **Pine Tree relighting for time 18h30:** *Top row left* - Ground Truth Image; *Top row right* - Relighting result; *Bottom row left* - Original  $\tilde{E}_{in}$ ; *Bottom row right* -  $\tilde{E}_{targ}$



The following Figures [A.34](#), [A.35](#), [A.36](#), [A.37](#), [A.38](#) show the full set of time lapse containing the results for relighting.

Figure [A.33](#) contains the input photograph used for relighting.



Figure A.33: Input rendering used to produce the results in the following Figures [A.34](#), [A.35](#), [A.36](#), [A.37](#), [A.38](#)

### A.2.2 European Beech

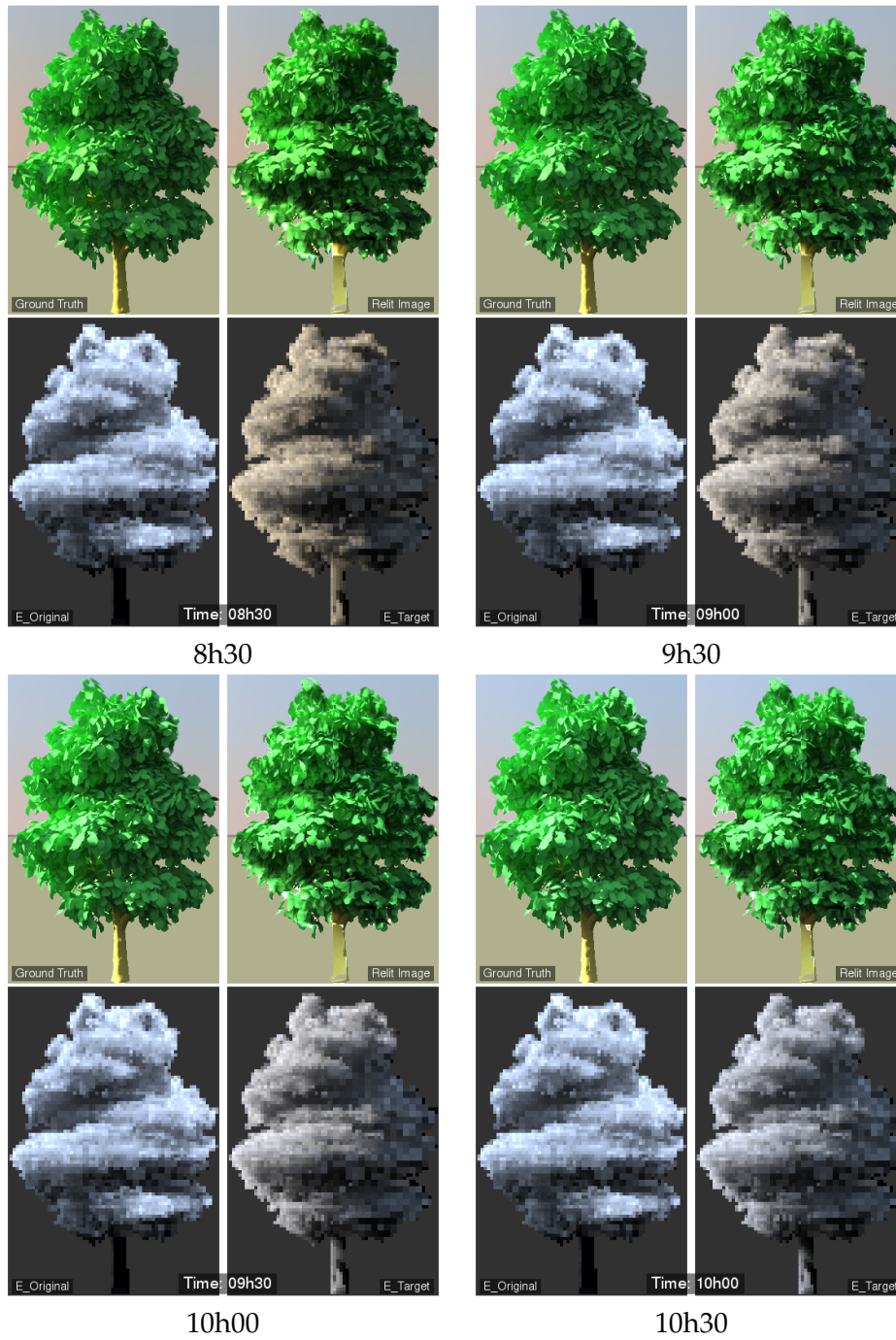


Figure A.34: Horse Chestnut synthetic rendering tree relighting

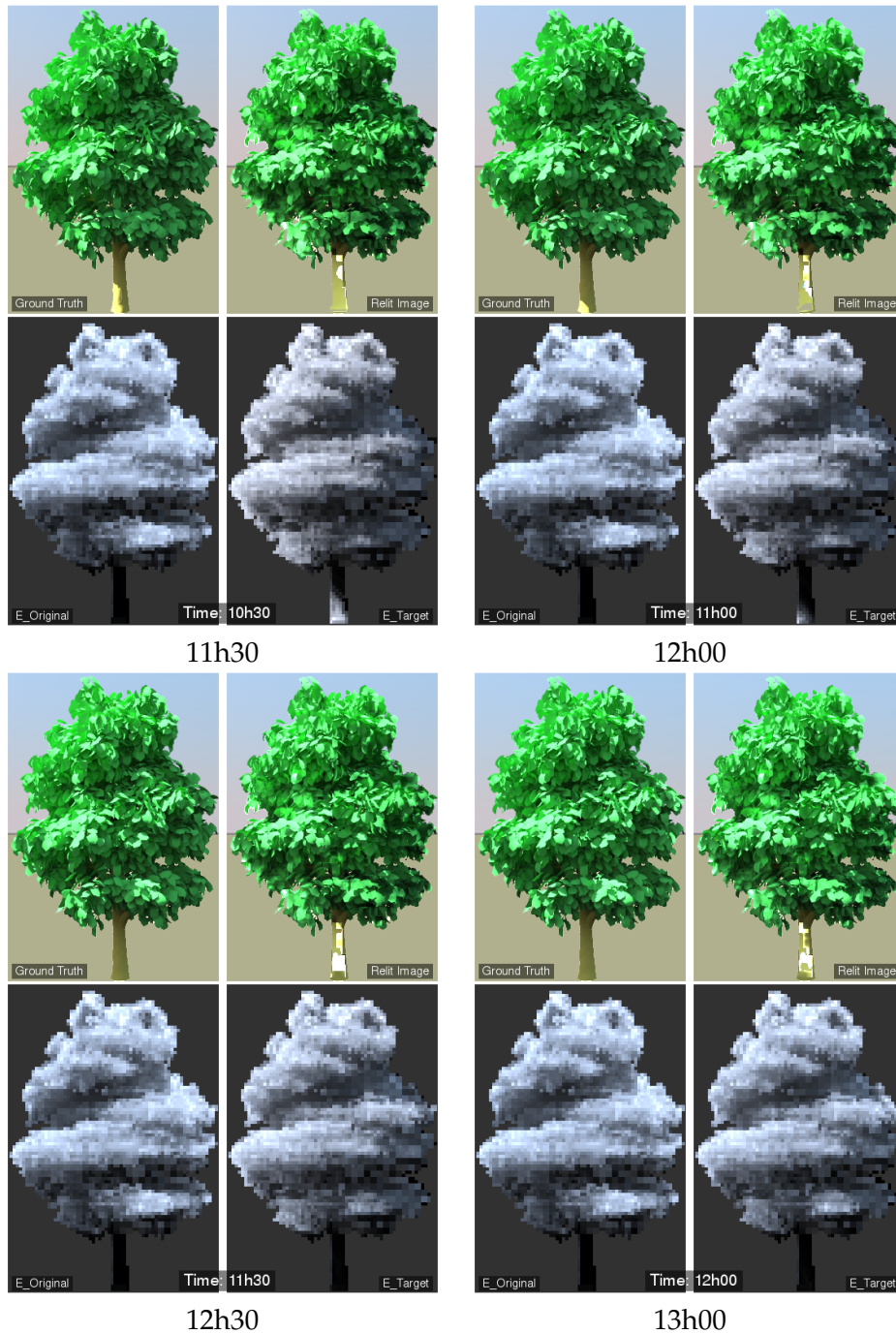


Figure A.35: Horse Chestnut synthetic rendering tree relighting

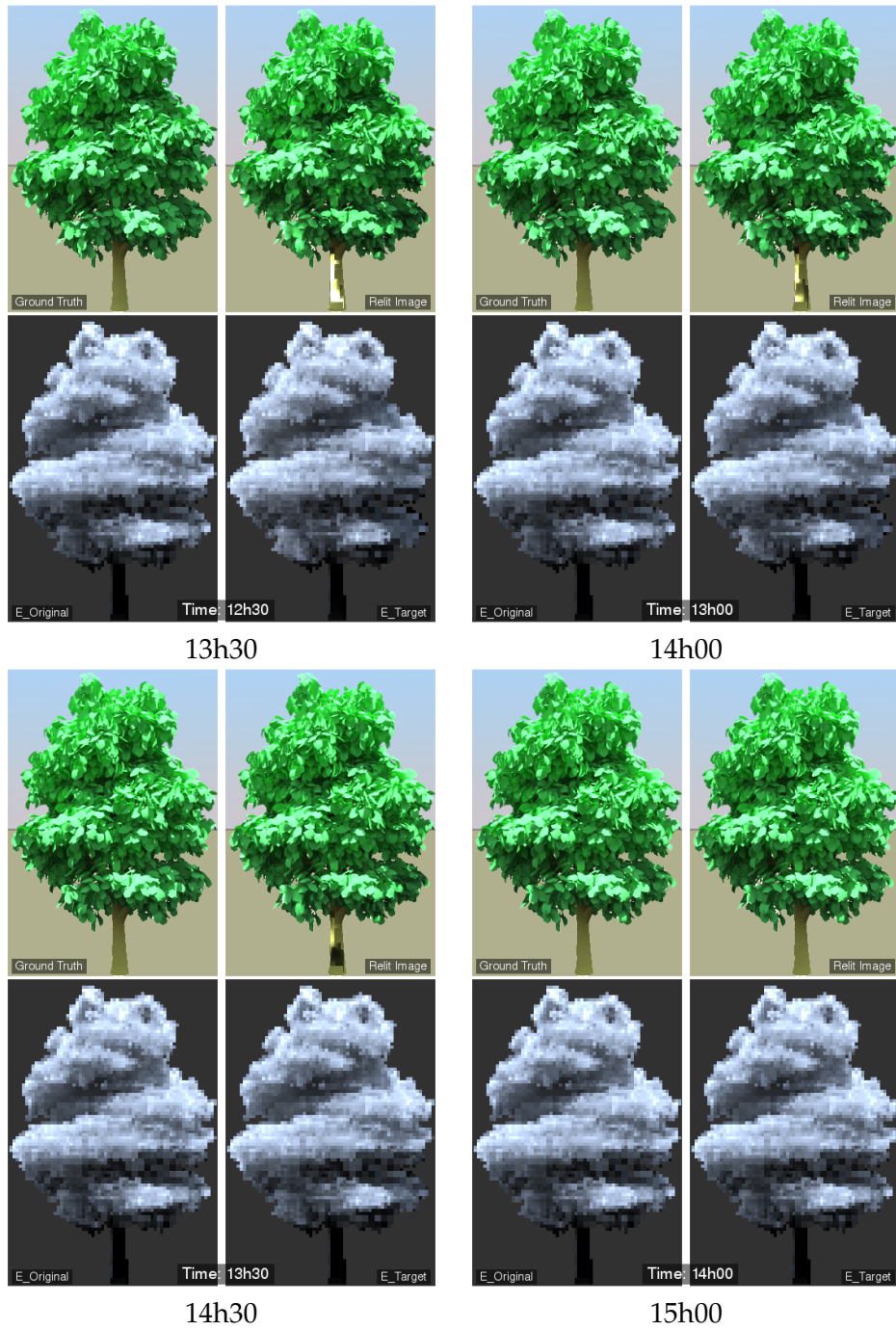


Figure A.36: Horse Chestnut synthetic rendering tree relighting

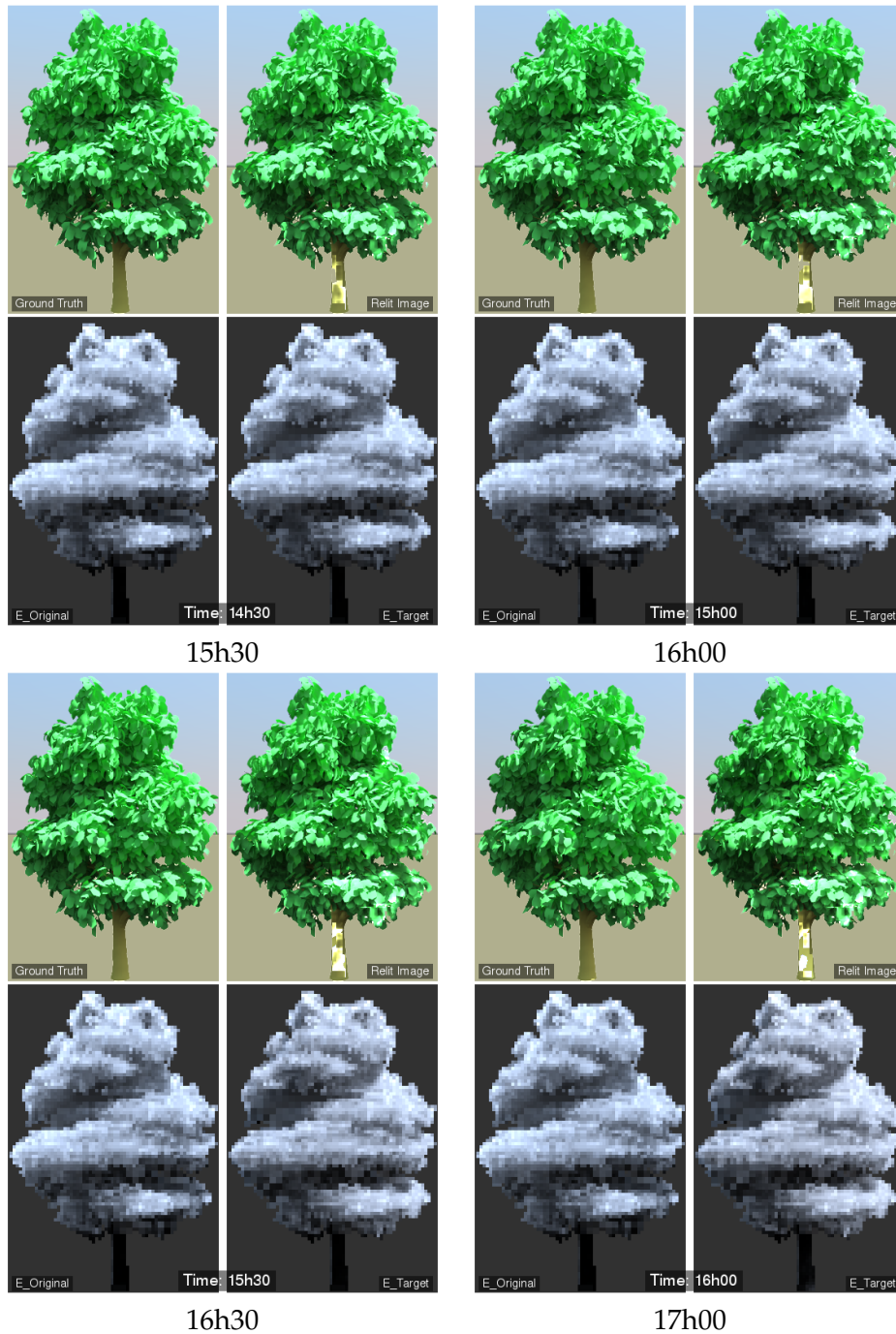


Figure A.37: Horse Chestnut synthetic rendering tree relighting

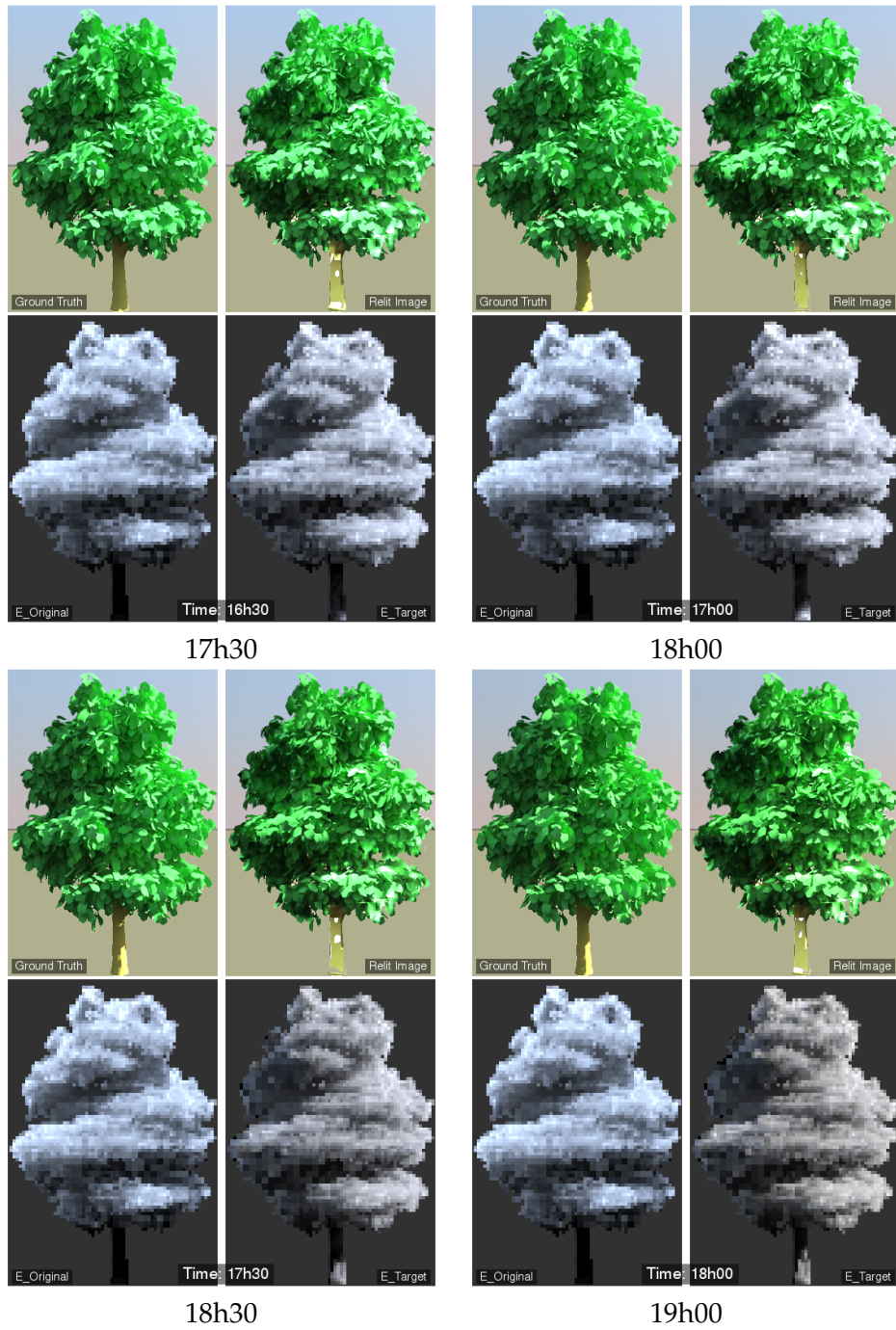


Figure A.38: Horse Chestnut synthetic rendering tree relighting

The following Figures [A.40](#), [A.41](#), [A.42](#), [A.43](#), [A.44](#) show the full set of time lapse containing the results for relighting.

Figure [A.39](#) contains the input photograph used for relighting.

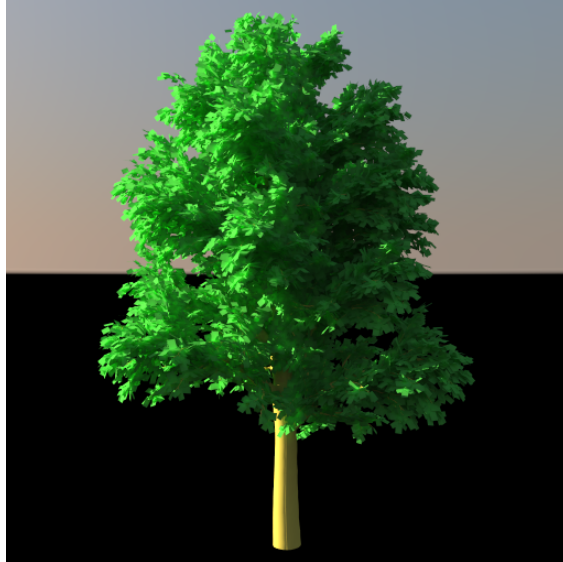


Figure A.39: Input rendering used to produce the results in the following Figures [A.40](#), [A.41](#), [A.42](#), [A.43](#), [A.44](#)

### **A.2.3 European Mountain Ash**

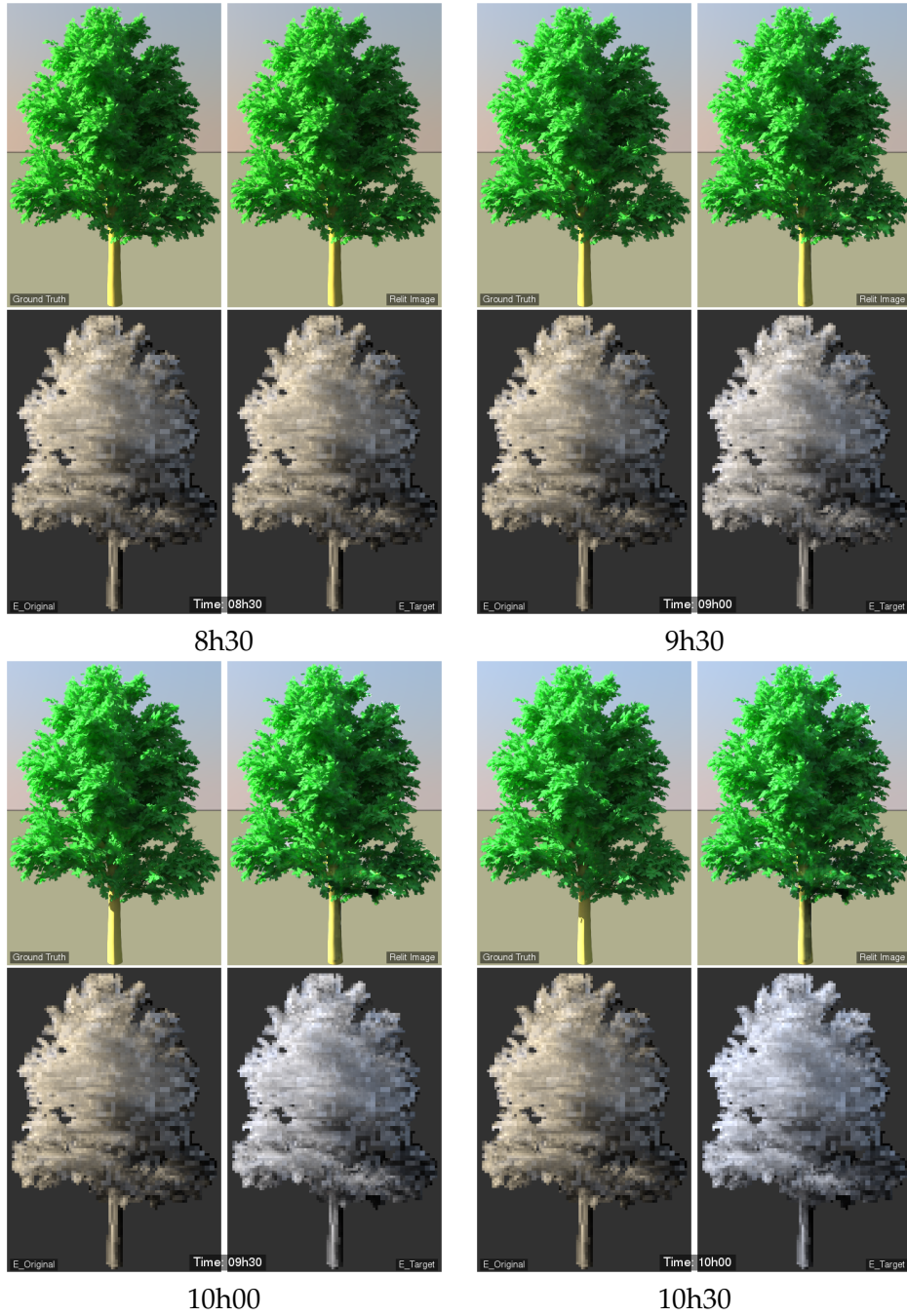


Figure A.40: European Beech synthetic rendering tree relighting



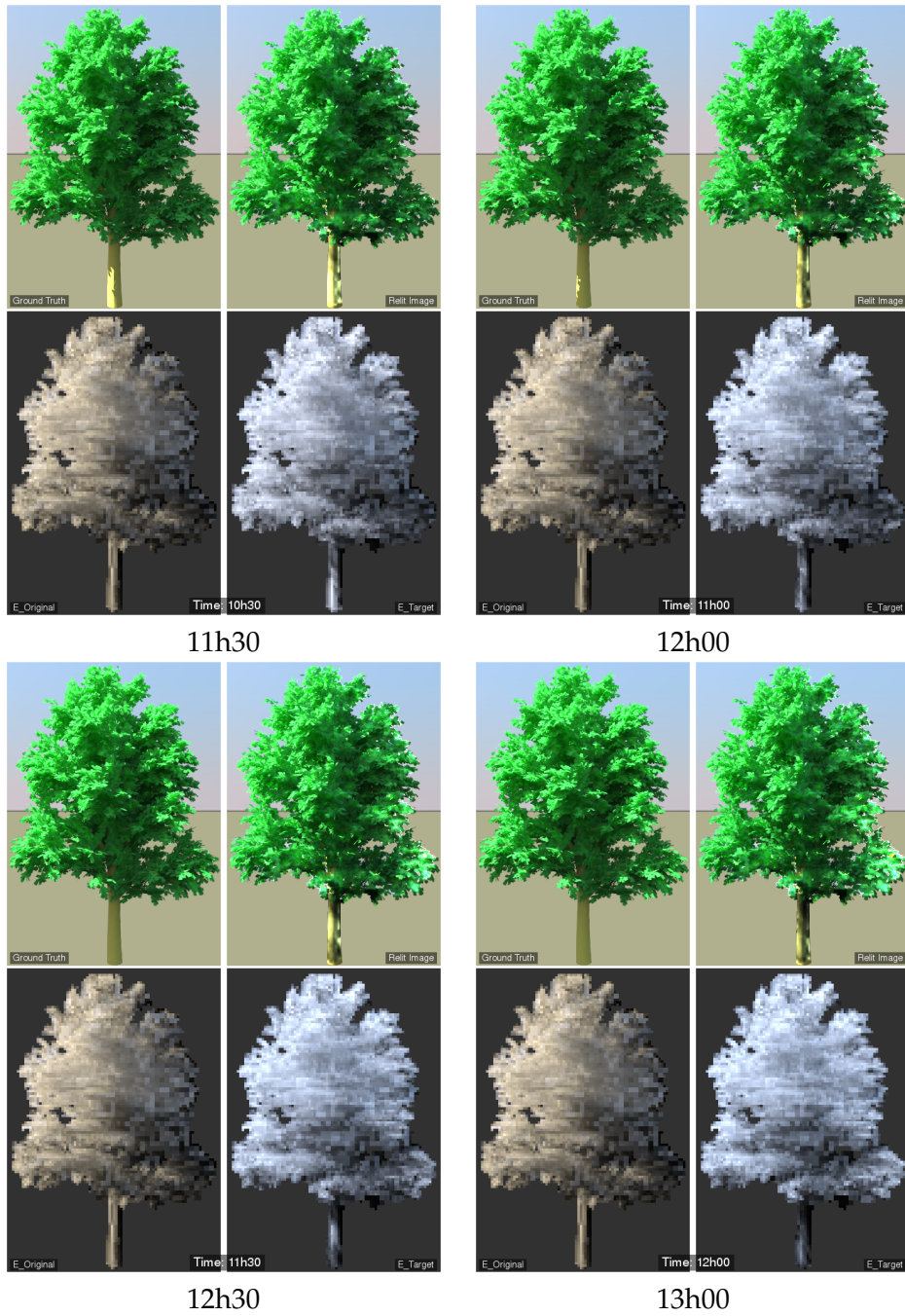


Figure A.41: European Beech synthetic rendering tree relighting

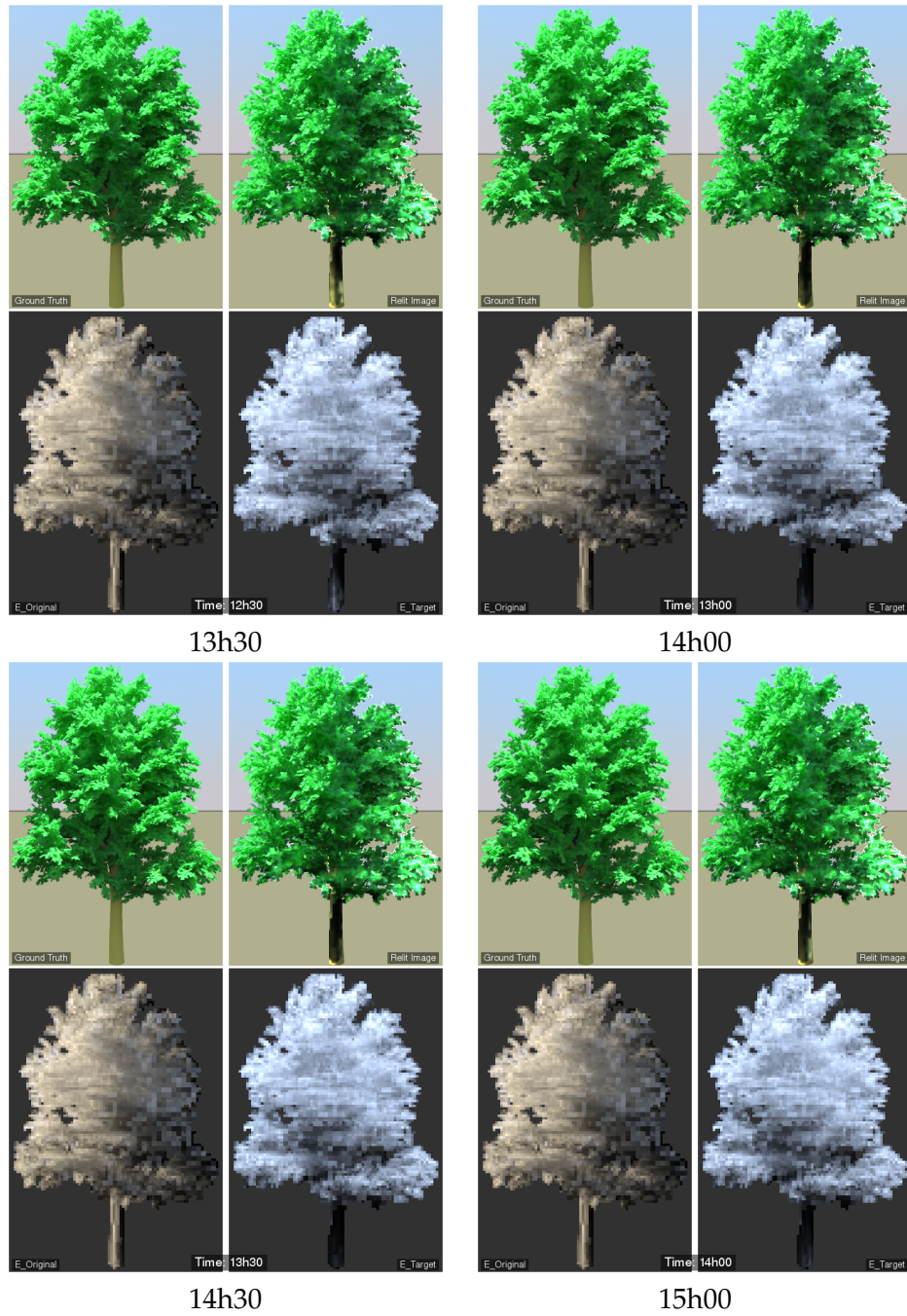


Figure A.42: European Beech synthetic rendering tree relighting

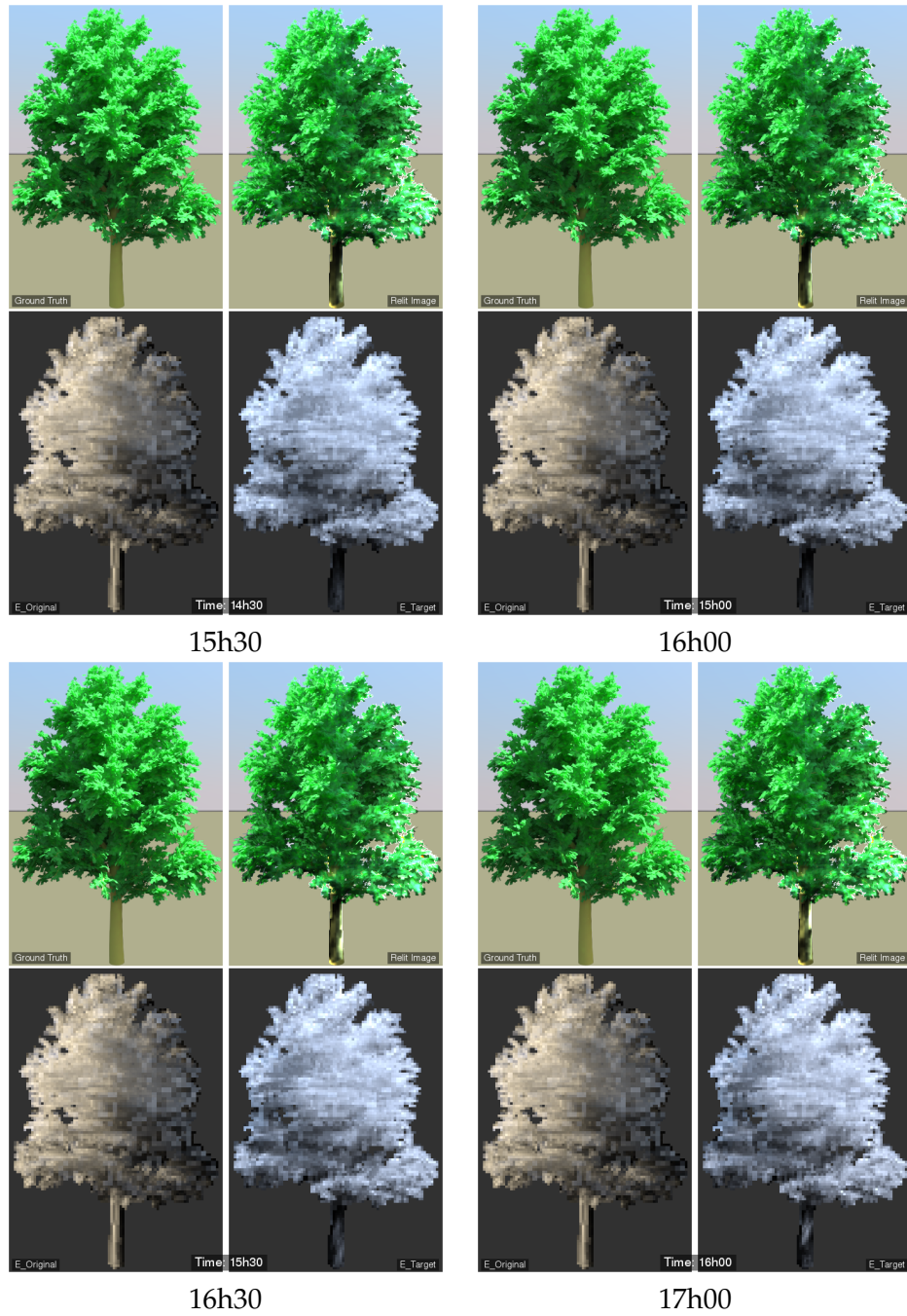


Figure A.43: European Beech synthetic rendering tree relighting

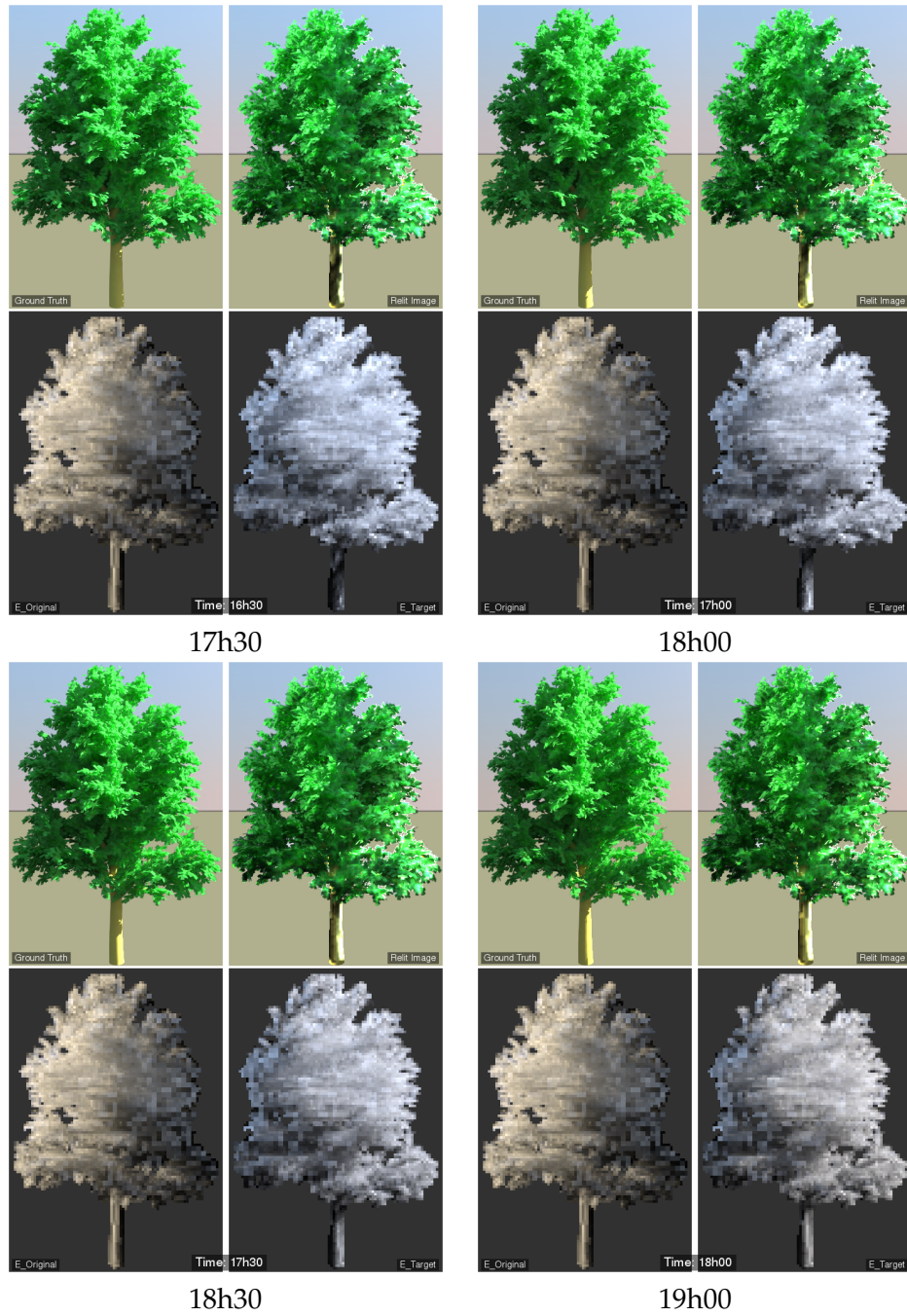


Figure A.44: European Beech synthetic rendering tree relighting

The following Figures [A.46](#), [A.47](#), [A.48](#), [A.49](#), [A.50](#) show the full set of time lapse containing the results for relighting.

Figure [A.45](#) contains the input photograph used for relighting.

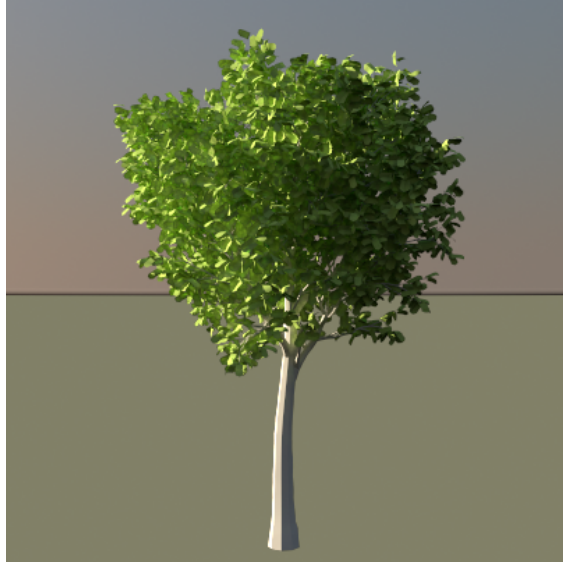


Figure A.45: Input rendering used to produce the results in the following Figures [A.46](#), [A.47](#), [A.48](#), [A.49](#), [A.50](#)

#### **A.2.4 London Planetree**

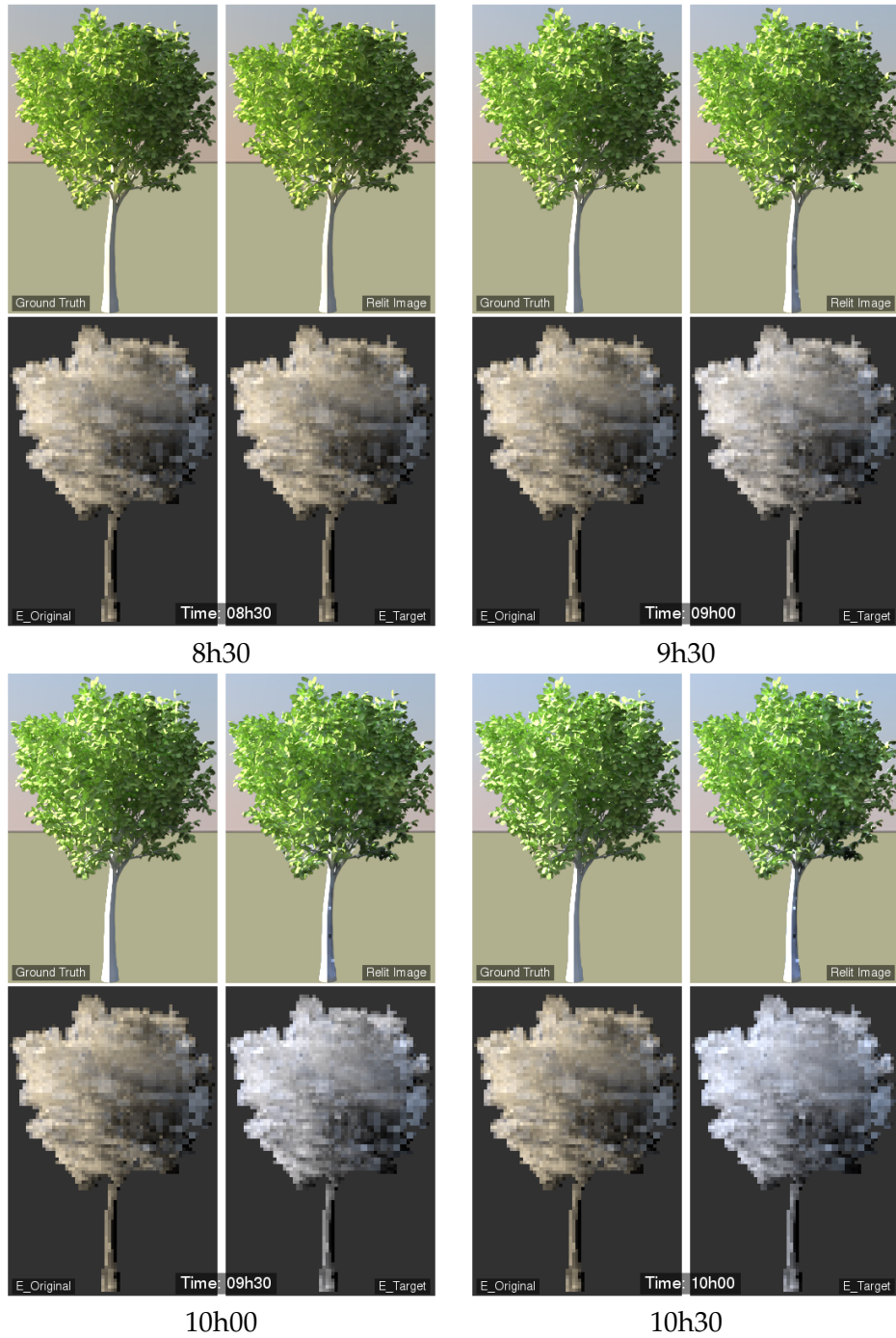


Figure A.46: European Mountain Ash synthetic rendering tree relighting

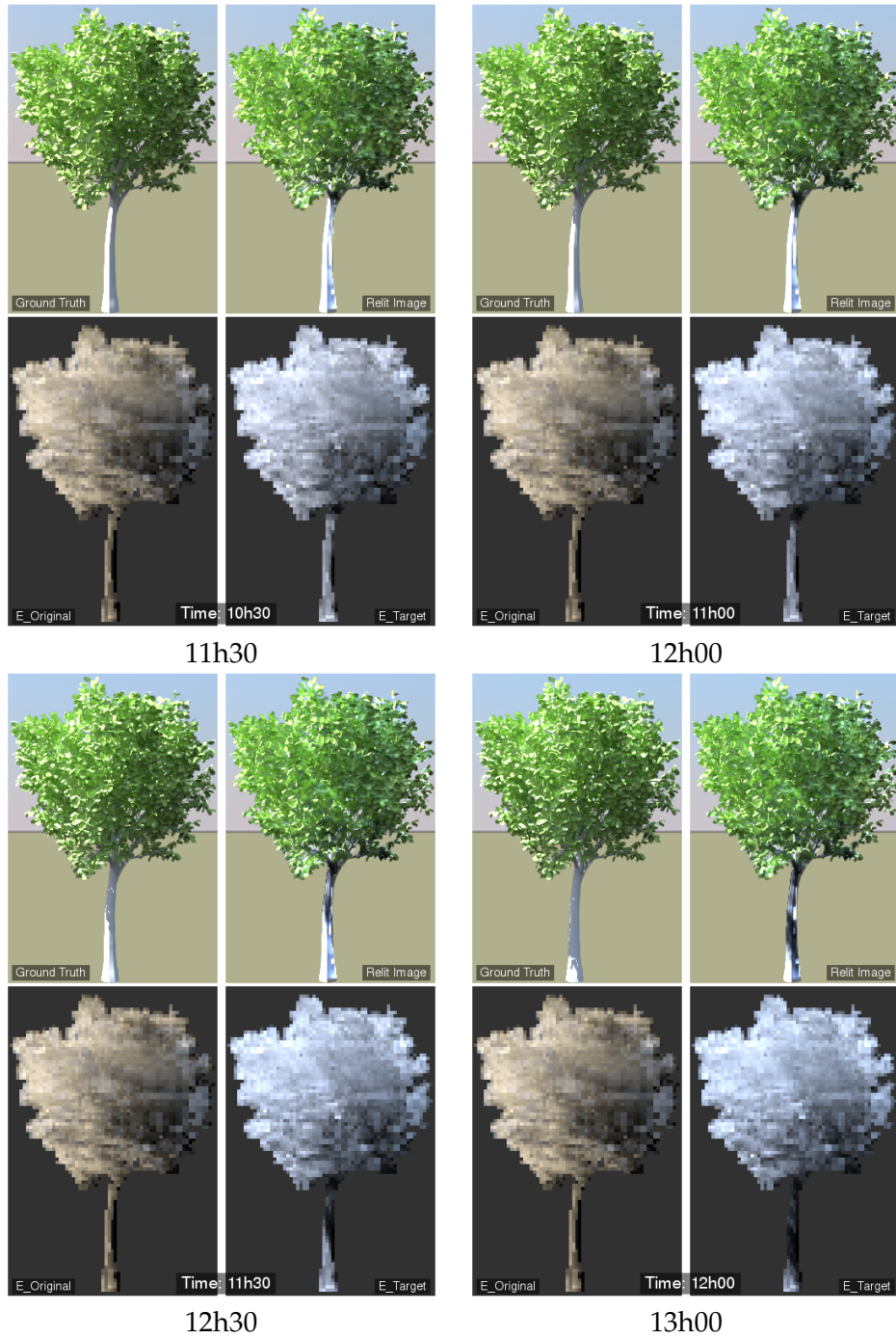


Figure A.47: European Mountain Ash synthetic rendering tree relighting

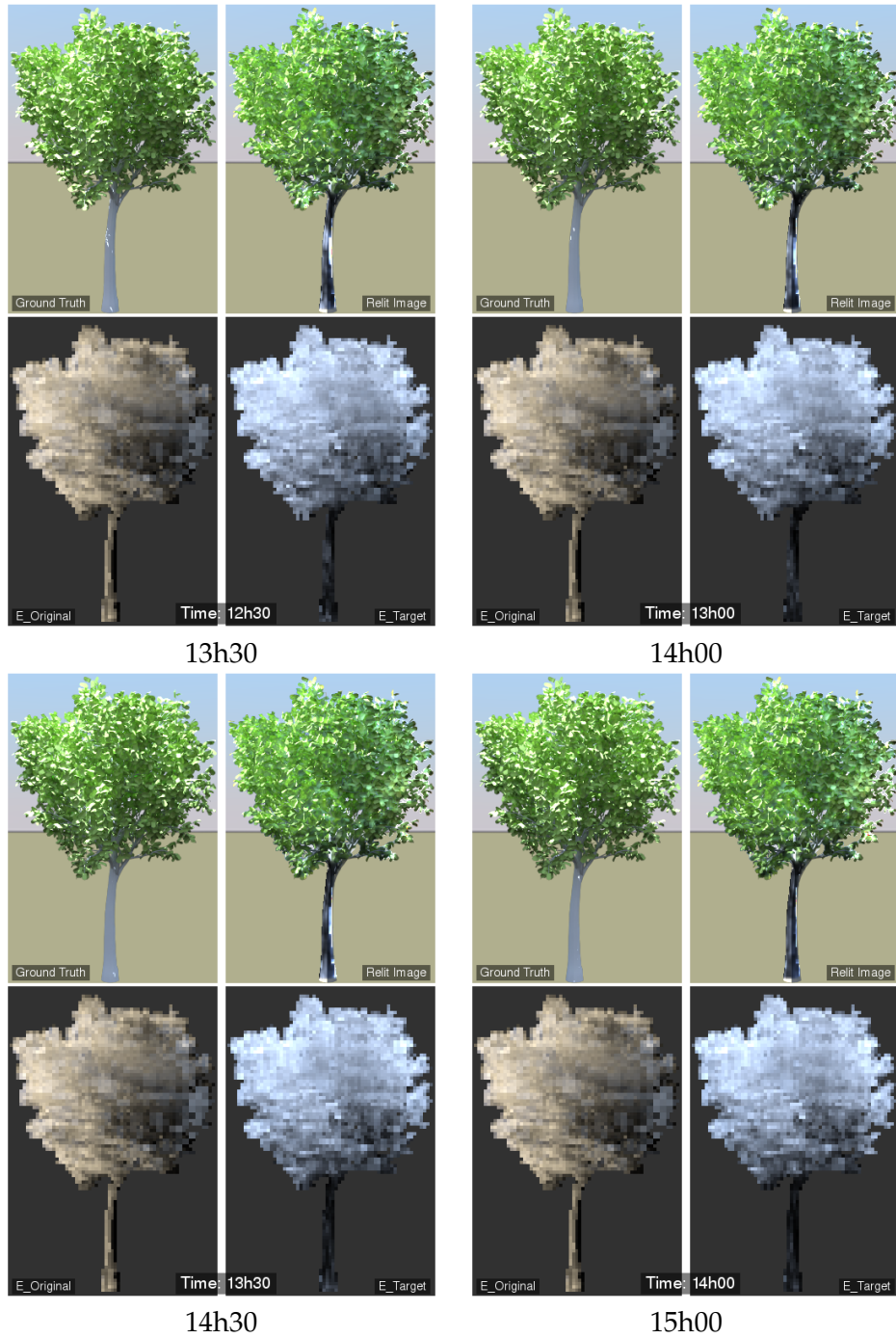


Figure A.48: European Mountain Ash synthetic rendering tree relighting



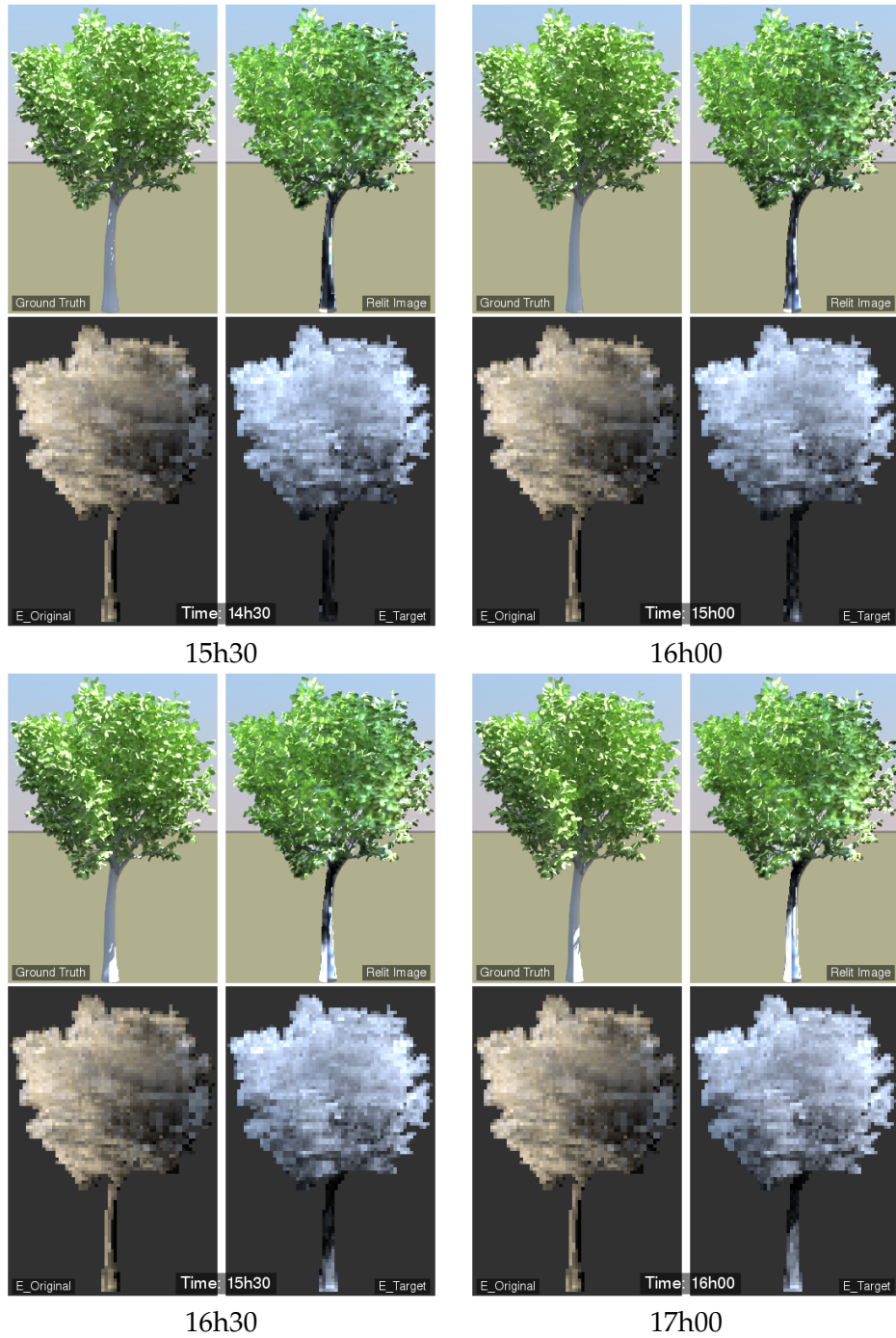


Figure A.49: European Mountain Ash synthetic rendering tree relighting

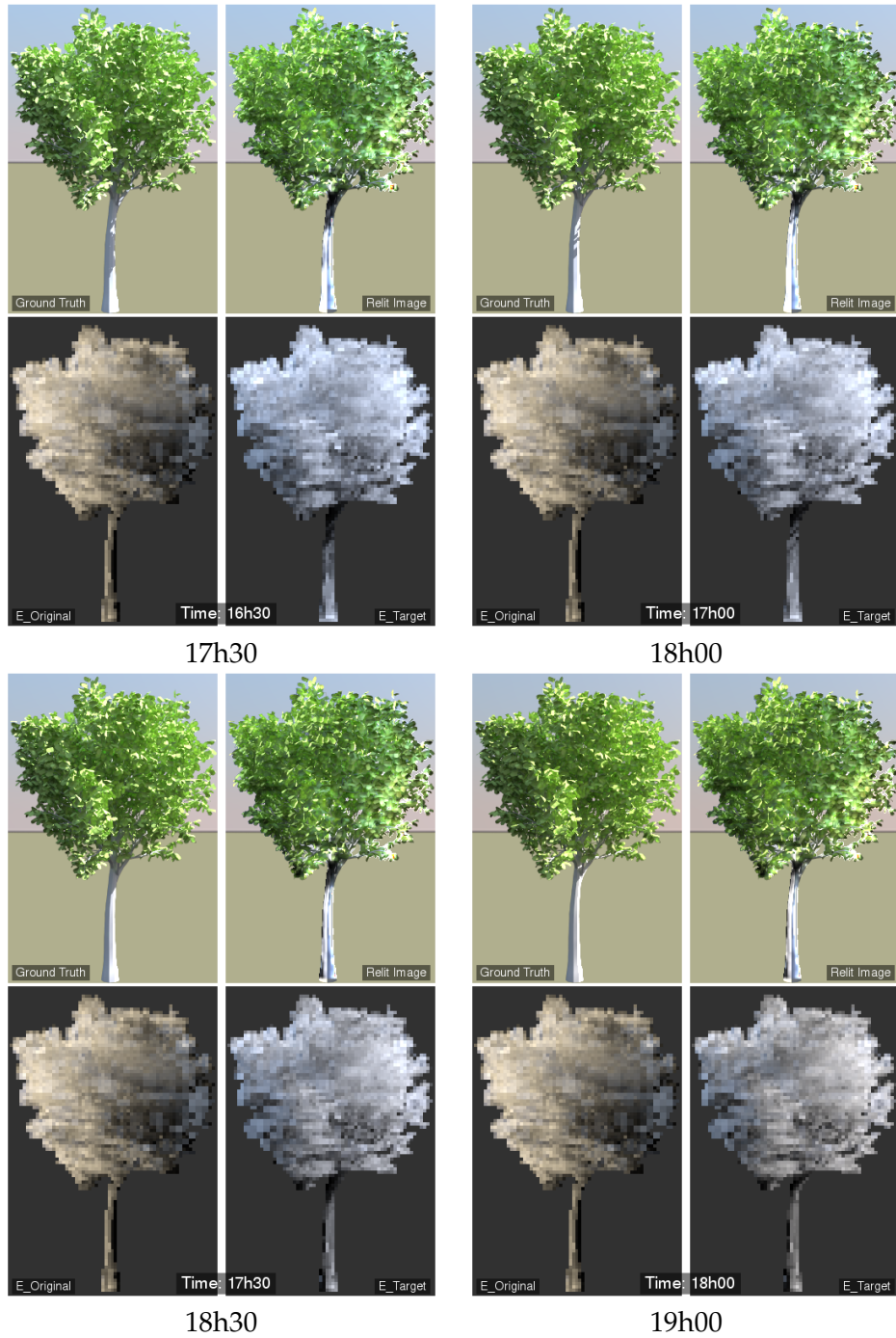


Figure A.50: European Mountain Ash synthetic rendering tree relighting

The following Figures [A.52](#), [A.53](#), [A.54](#), [A.55](#), [A.56](#) show the full set of time lapse containing the results for relighting.

Figure [A.51](#) contains the input photograph used for relighting.



Figure A.51: Input rendering used to produce the results in the following Figures [A.52](#), [A.53](#), [A.54](#), [A.55](#), [A.56](#)

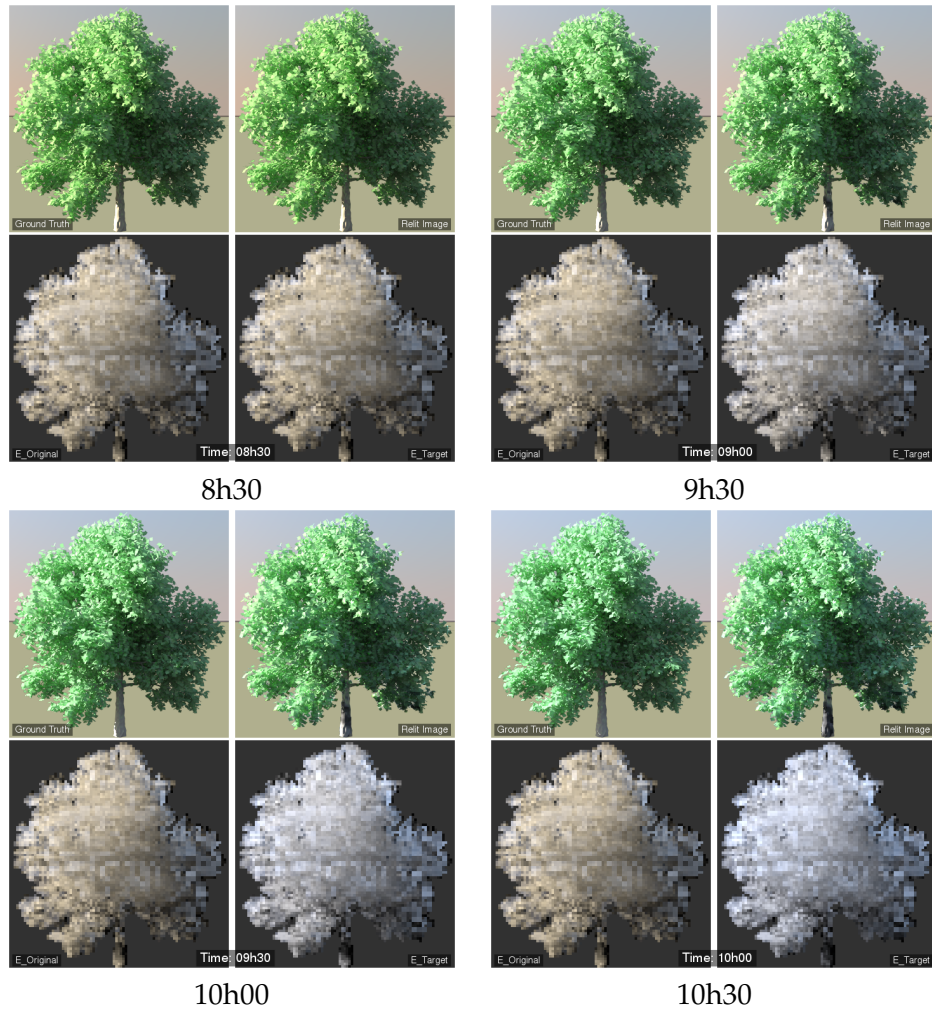


Figure A.52: London Planetree synthetic rendering tree relighting

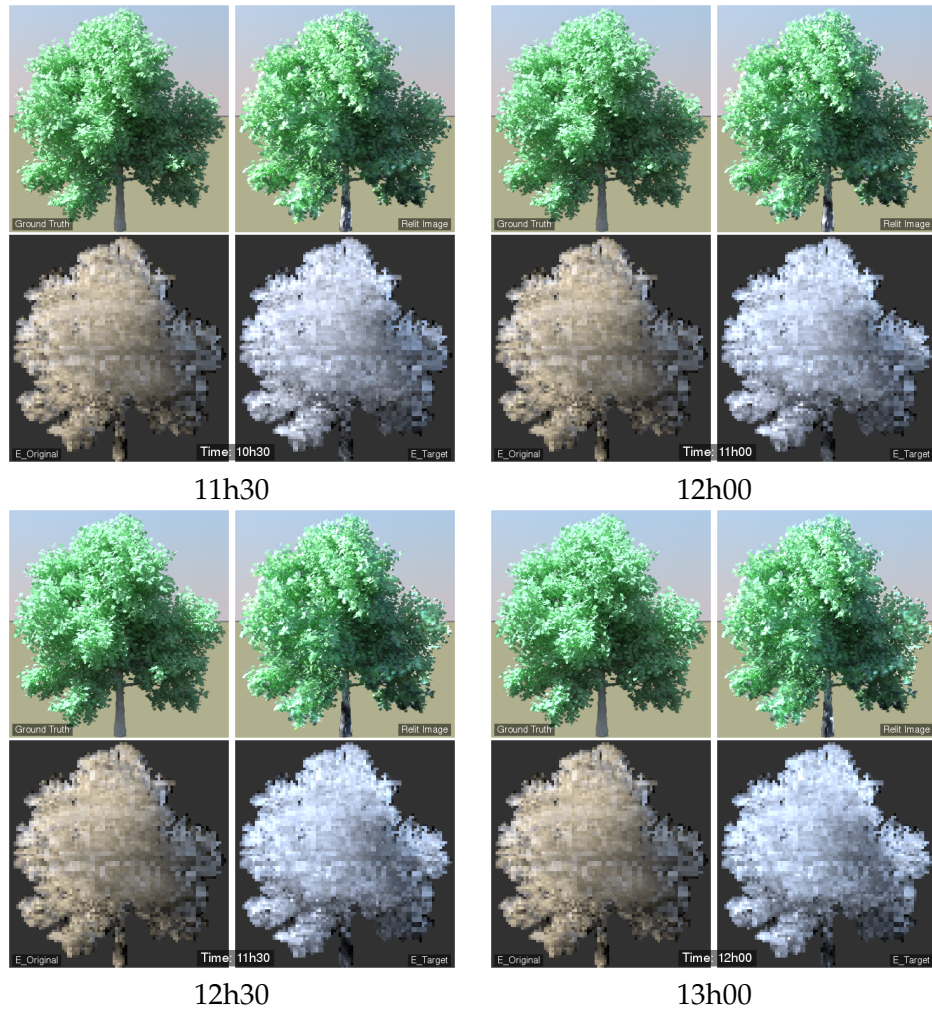


Figure A.53: London Planetree synthetic rendering tree relighting

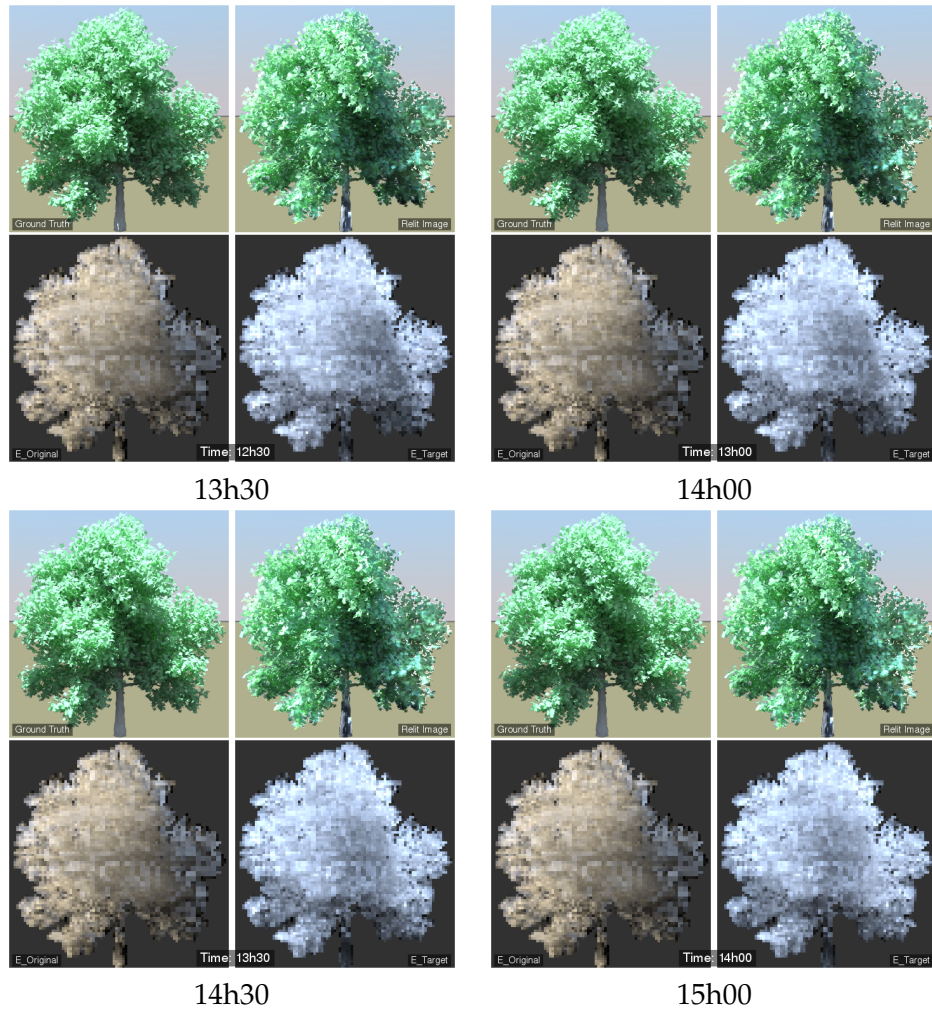


Figure A.54: London Planetree synthetic rendering tree relighting

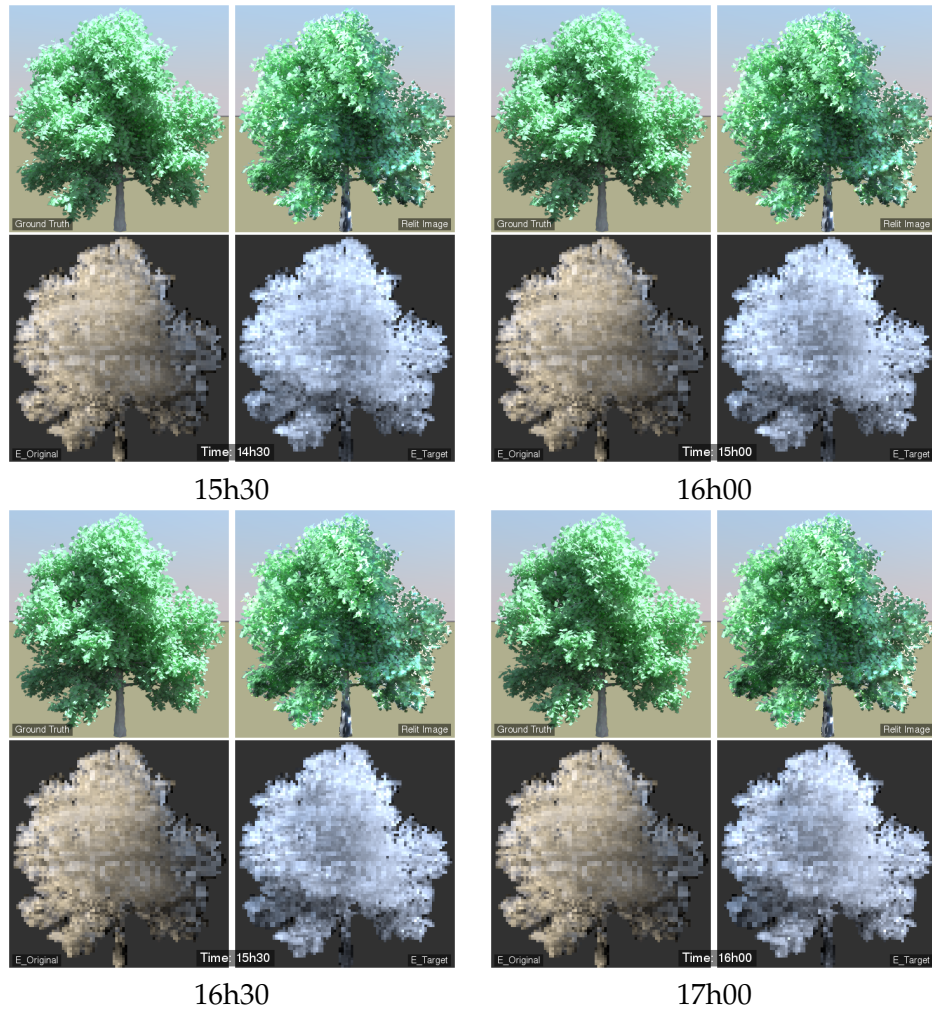


Figure A.55: London Planetree synthetic rendering tree relighting

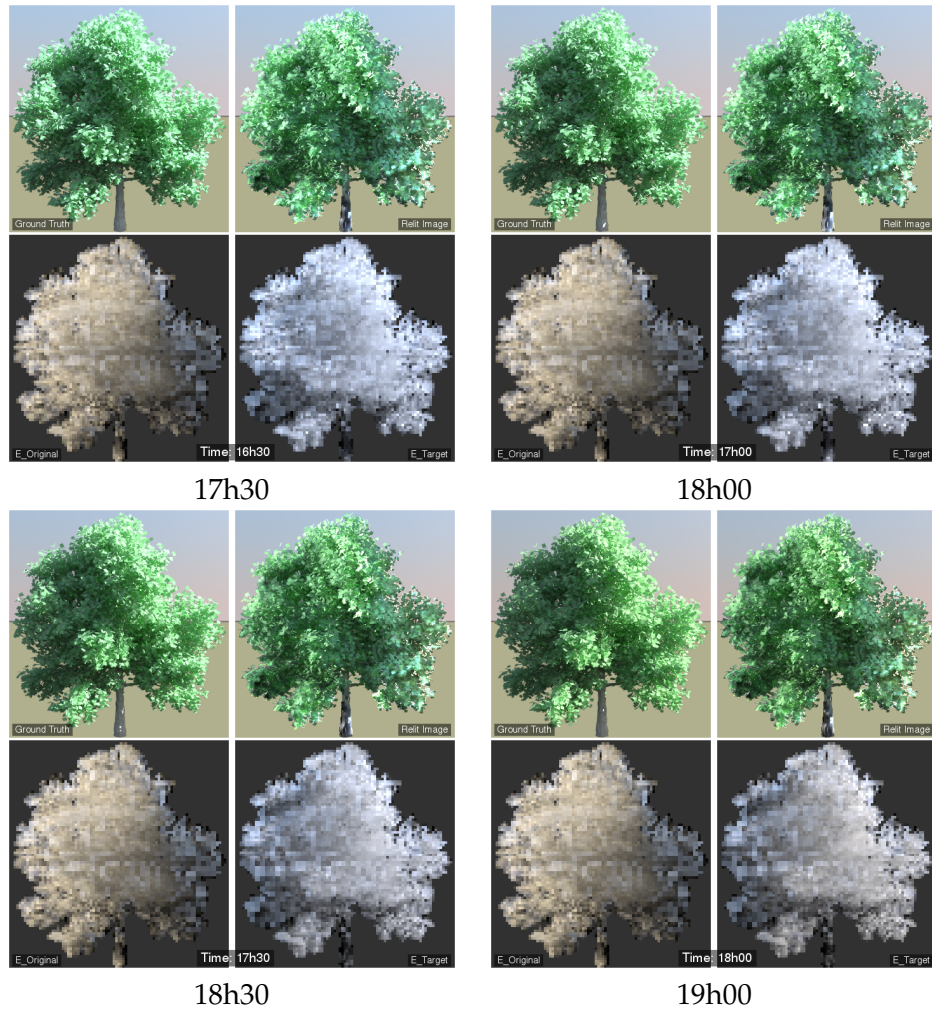


Figure A.56: London Planetree synthetic rendering tree relighting